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THE PSYCHOLOGY OF UNCONVENTIONAL LANGUAGE*

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Introduction

The two important aspects of linguistic study are the historical (12a) and the psychological. The former owes its rise to philology, whose original interest was the interpretation of Classical literature. Out of this interest grew historical linguistics, which concerned itself with the genetic relationship of languages and revived the ancient philosophical problem of the origin of language. But however far into the remote past the investigation of linguistic remains was carried, it could not penetrate the past beyond a hypothetical ancestor of historical languages, and it was found impossible to determine how primitive man spoke, in absence of the chief witness. As the oldest language—remains that could ever be discovered could not be regarded as primitive and original, this end of the line of inquiry had to be abandoned and attention was turned to the immediate present as offering a surer basis for scientific research. The study of the language of races now living in primitive conditions seemed

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to offer a closer approach to the subject, but this is also to be regarded as unsatisfactory, for the original language of the lowest savages is also lost in antiquity. The child and its animal congener remain as the only means of approach to the problem of the origin and growth of speech. But now the problem is no longer one of historical linguistics. It must now be framed in terms of physiology and psychology. While the physiology and the psychology of language throw light on linguistic problems, there are no better means than those that the study of language affords to investigate certain comprehensive problems of psychology.

It is only since about the middle of the last century that a psychological method of linguistic study has been recognized. Steinthal's "Grammatik, Logik und Psychologie" (39) was the epoch-making work that gave psychology the place in linguistics that philosophy had formerly occupied. Among later writers it is recognized by Frederich Müller, in his "Grundrisz der Sprachwissenschaft" (21), published in 1876. Paul, in his "Prinzipien der Sprachgeschichte" (25), published ten years later, regards psychology as "die Vornehmste basis aller in einem höhere Sinne gefassten Culturwissenschaften." Although this work was named 'The Principles of Historical Linguistics,' Wundt affirms (39, p 6) "Nicht als Sprachgeschichte, was es nach der ganzen Anordnung und Behandlung des Stoffes weder sein kann noch sein will, sondern als Sprachpsychologie hat unzweifelhaft das Paul'sche Werk seinen Erfolg errungen und seinen Einfluss ausgeübt." To come down to more recent times, a notable contribution to the subject is that of van Ginneken (32), published in 1907. The best known of all the works on the subject, however, approaches it from the direction of social psychology—Wundt's "Die Sprache" (37) in two volumes, first edition published in 1900 and third in 1911.

When once language was recognized as a product of development that had pursued its way for unknown ages, that was above all arbitrary dictums and went on unchecked by fiat or decree, students became expositors rather than law-givers of style. There arose a new reverence for the facts and conditions of growth. Interest in these made the "best usage" a matter of only practical importance. And now how people do speak seems more interesting to students than how they ought to speak.

But of the studies in the psychology of language above referred to, all have been concerned only with the fixed and standard forms of language or with dialects that are related to some great literary language, except that Wundt makes

a passing reference to the "Gaunersprache" in the first edition (37), while he devotes about a page of the third edition to "Slang" (37 Vol. 1, p. 617). They mostly represent attempts to explain the laws of language familiar to the student of linguistics and philology in terms of psychology.

For many years there has been a wide popular interest in the subject of slang and unconventional language generally, as indicated by the number of dictionaries of unconventional words and phrases that have been published. Besides, there have appeared numerous essays on the subject. Among the more important collections of unconventional terms are those cited in the reference list appended to this study. Much of the popular interest in the subject has in the past been due to the question of the relation of slang to the purity of the English language. Again and again a determined stand has been made against the supposed corrupting influences of slang. On the other hand, it would be easy to collect an anthology in praise of slang. The philological tradition from Bopp and Pott to Whitney and March has been tolerant of change through the unconventional, and the list of those who, either by precept or example or both, have been favorably disposed to the use of popular speech, contains such names as DeQuincey, Noah Webster, John Hay, Burns, Lowell, Howells, Bret Harte, Balzac, and many others whose names will readily occur to the reader. It is Lowell's view (40) that "only from its roots in the living generations of men can a language be re-enforced with fresh vigor for its needs; what may be called a literate dialect grows ever more and more pedantic and foreign, till it becomes at last as unfitting a vehicle for living thought as monkish Latin." "True vigor and hardiness of phrase do not pass from page to page, but from man to man."

In the psychology of language in general very little has been done in English; in the psychology of slang nothing at all has come to the attention of the writer. The work that has been done in Germany in compiling dialect and slang dictionaries is inspired mostly by an interest in ulterior purely linguistic problems. In France where the activity in this field is greater than in any other country, there were, at first, besides numerous dictionaries, studies with purely linguistic aims. The prefaces to the French dictionaries of argot bring us closer to the heart of our problem. In his "Dictionaire de la Langue Verte," Hector France tells us that argot is found wherever two classes exist in society. It has outgrown associations limited to thieves, for each profession has its argot which it employs not only to be unintelligible to the layman but to render its phrase picturesque, to give it a variegated

appearance of strangeness. But argot has long since invaded all the realms of society, and now *il prend partout droit de cite.* Delavan in his "Dictionaire de langue verte" (1883) says: "In France one speaks perhaps French, but in Paris one speaks argot, and an argot which varies from one quarter of the city to another, from one street to another, from one class of people to another. It is in the city that new words are fabricated. Paris sets the style for words as it does for hats."

Besides these popular essays and philological studies of slang, there are two works in French which have approached more closely than any others to the psychological interest of the present study. An article by Raoul de la Grasserie in (14) Revue Philosophique, "La Psychologie de l'Argot," was followed by a volume, of one hundred and eighty-five pages, in the Bibliotheque de Linguistique, on the "Etude Scientifique sur L'Argot et Le Parler Populaire," by the same author (13). In the first article, the writer calls attention to the importance of the psychological study of argot and attempts, as he says, to sketch such a study in its chief outlines. The work which followed carries out the suggestions of the preliminary study, so that the two studies may be regarded as one and the same. The larger work did not become accessible to the writer of the present study until after the material for the study had been collected and the plan of treatment decided upon. The only other work on the subject known to the writer is "Le Génie de L'Argot" by Alfredo Niceforo (25). This work came to hand when the present study was all but completed.

An examination of these studies reveals that argot presents the same difficulties of definition and classification as does slang. It is in the attempt to solve this problem that these studies differ fundamentally from each other and that both differ from the present study in slang. De la Grasserie finds no word in French that serves to denote with sufficient exactness the kind of language which he aims to analyze, as *argot* is unsatisfactory for scientific purposes. He has recourse to the use of the Greek base, *glossê,* on which he builds a nomenclature for many different "modes of speech." The Introduction serves to justify this method of procedure. In the first place, a language is distinguished from a mode of speech. It possesses a vocabulary and a grammar, belongs to one nation or race, and serves as the instrument of expression for all classes of the same nation. The several languages divide up territory into "vertical divisions." Within each language there are modes of speech. These forms, or modes, of speech have a common vocabulary, the same literature, and the same grammar in the same language. Their nationality

is the same, they are grouped in the same place, but they become distinct modes of expression for every class of society and every profession. Thus many modes of speech are spoken in a single language. As a territory divides itself between the dialects in vertical divisions, the different modes of speech are superposed in "horizontal divisions." There is a higher mode, a lower mode, a poetic mode of language, etc., etc. In all languages there exists at once a mode of speech more material and more concrete and another more intellectual and abstract. M. de la Grasserie (13, p. 17) divides the "gloses" or modes of speech into two general classes with numerous subdivisions. If a special monograph were devoted to each of these "gloses," the whole undertaking would assume cyclopaedic proportions. This wealth of nomenclature the author finds necessary to escape the ambiguous implications of the word argot.

The English *slang* presents the same difficulties. The term is generally applied to unauthorized language whether it be in popular vogue or shunned as vulgar, or the jargon of some particular class, or the cant of criminals. The classification of slang in the present study does not aim to be so close as that of M. de la Grasserie. The most fundamental of them all and the one which corresponds to that of the work before us avoids the ambiguities of slang by fixing the limits of variability of language between the abstract standard of a class (somewhat equivalent to M. de la Grasserie's *anaglose*) and an individual caprice which may at any time for a reason or for no apparent reason make a departure from the language of the class. For this departure lawless forms may be created, or selected from any unauthorized source. It may be from the slang of a trade, profession, occupation, social class; from a provincial dialect, or the cant of thieves. This individual tendency to break through the lines of conventional language is the subject of the present study. It is the language of individual freedom, the same tendency that accounts for change in government and social life, as well as in language. The word unconventional, then, is a blanket term intended to cover all the kinds of departures from the standard of a class that it is possible to make.

In "Le Génie de L'Argot," M. Niceforo attempts to show that the two fundamental laws of argot (to which the author gave formulation many years before in his book, *Il gergo nei normali, nei degenerati e nei criminali*) are: Every group, every association however small, from the single couple to the largest group, which feels the need of defense in the environment where it lives, creates an argot for the purpose

of concealing its thought; second, the more the necessity of defense and the severity of the struggle are accentuated the more does argot complete and extend itself (23, p. 7). The author's whole idea of argot corresponds with M. de la Grasserie's *cryptoglose* and with thieves' cant, or cryptic slang, of the present study. He carries the principle of intentional secrecy and class conflict farther than the facts seem to warrant. The creation of an argot by deliberate intention is an artificial forcing of language in strong contrast with the spontaneous rise and growth of the unconventional as set forth in this study. M. de la Grasserie combats the assumption of a malicious and defiant motive of language creation in the lower classes of society as if in reply to the author's principle of group conflict as repeatedly emphasized in *Il gergo nei normali, nei degenerati e nei criminali* and "Le Génie de l'Argot" when he says, "Le peuple n'a pas eu le malin plaisir, en présence d'un language trop élevé et un peu ridicule pour lui, d'y contredire en rabaissant tous les mots de l'abstrait au concret, de l'immatériel au matériel; ce serait un acte de volonté expresse, or, de tels actes sont inconnus du language" (13, p. 6). But it is possible that every country reveals a slang of a peculiar character owing to different social conditions which give it rise.

The material used in this study of the unconventional in language consists largely of a collection of words and phrases, more or less familiar in England and America to-day. Besides collecting from the English and American dialect and slang dictionaries about five thousand select words and phrases now in use, the writer has examined many of the more recent popular works in this form, and the columns of metropolitan dailies. He has had the assistance of observers who reported on valuable material and gave introspections on problems set by him. In making the selections of slang uses, the aim was to secure, in the first place, the greatest variety possible in meaning and form. No arbitrary classification was assumed, the material being allowed to exhibit itself in its greatest diversity. After the collection was made, it was found that this principle had been pursued so faithfully that it was almost impossible to make anything like a consistent classification. It was found, as will be seen later, that slang represents characteristics that answer to the most contrary terms of qualitative description. In the second place, it was noted that slang had a more copious vocabulary in some subjects than in others. On some of these subjects exhaustive lists of words were collected. The results were instructive in that they showed what the unconventional tendency of mind avoids as well as prefers.

Sources of Unconventional Language

In view of the fact that standards and tastes have a history and a development, it is safe to assume that there has always been an unconventional language, at least an inevitable tendency towards individual variation. Although what is called slang originated in comparatively recent times, the impulse toward the unconventional has from the earliest times found satisfaction in some way. It is a universal impulse which tends to manifest itself when a vernacular becomes crystallized in a literature and more especially when a literature becomes classic. The vernacular continues to exist in other forms following its own course of development to satisfy the unconventional impulse. After Homer wrote the Iliad his language became "correct," and Protagoras drew his examples from it when he wrote the first book on correct usage in Greek. With the poet Ennius began a marked distinction between Roman literature and popular speech, which was destined to remain in Italy until Dante wrote in the vernacular. In England and on the continent, where first Latin and then French was the language of diplomacy, learning, and commerce, the popular language was regarded as fit only for the ordinary uses of the world; it was, therefore, for the time the form of unconventional expression. Works regarded as having the highest scientific value were produced in Latin. And this language, or the French, was for a long time after the Norman Conquest used, as the most costly raiment, only on the most formal occasions. As long as this was true, English, the language of the masses, served to express the more informal, unconventional, and vital states of mind, the more honest emotions, the deeper feelings of love and hate, of joy and sorrow. As the distinction between the formal and the unconventional continues the vocabulary of the former becomes more abstract and pale while that of the latter becomes more copious and vigorous. This condition of language is the great opportunity of genius. It was the opportunity of Shakespeare, of Tyndale, of Bunyan; of Aristophanes in Greek, Plautus in Latin, Cervantes in Spanish, Rabelais and Moliere in French, Luther in German. All used the unconventional vernacular. Thus, for freshness and vigor of effect, writers appeal to the people in their most familiar language; but by so doing their language in time becomes classic and crystallized and is no longer the fit expression of the fluent freedom of the unconventional. Then the occasion is ripe for a new growth of unconventional forms, different in character from those which preceded it.

But the unconventional in language is characteristic of all

nations and tribes of people. It may be due to social and religious relations of the tribes or to their economic life and tribal customs (22). Savage tribes often possess vocabularies specially pertaining to the arts of peace and war. In some parts of the world the women have their own language. Rochefort in "Histoire Naturelle et Morale des Iles Antilles de l'Amerique," quoted by Lasch (15), reports a language of men which the women understand but never pronounce, and a language used by women which the men do not use except to make sport of it. The result is that to a large extent the language of the men differs from that of the women. Women's dialects are to be found in all of primitive America from Alaska to Patagonia, and they are common in South Africa as proved by numerous studies made by ethnologists referred to in the work of Lasch. Magic and religion seem to require a dialect different from the ordinary language. The priestly class develop it and by keeping it aloof from the rest of the tribe cultivate popular respect and perpetuate their authority. It is due to the superstitions of magic and religion that there are special languages for fishermen and sailors, even among civilized races, for men engaged in various industries whose success is believed to be due to the favor of the deities in some way especially connected with their activities. The camphor industry, the gold and zinc industry, war, and the harvest, require among many tribes a special dialect. Besides these, there are secret dialects understood only by those who have passed through the pubic initiations (10). The savage also has his court language, his market language, even his thieves' cant. Most interesting of all is the secret language of the Maoris of New Zealand, the Hapaos of the Island of Marquesas and others, which probably originated from the play impulse of children and is used by their elders (6) also with ludicrous (31) motives (33). Schlegel (26) reports the Sala language, a humorous secret dialect invented by the Chinese children of Amoy in South China. It consists in changing the conventional speech by doubling or tripling the syllables and changing the initial letter to *s* or *l*. According to a report from "Am Urquell" in Science (27), there are, altogether, not less than one hundred and fifty secret languages. Many of them are children's languages; such as "Potter's Latin," "Dog Latin," "Robber's Language," "Goose Language," all attributed to the school children of various parts of Germany. Besides, there are the "Crane Language" of Denmark, the "Bob Language" of Austria, the "Katzenellenbogen Language" of Germany. It is safe to assert that there is hardly a locality in any part of the world without some unconventional lingo.

All these dialectic variations fall readily into two classes. In some, distinctions of form are arbitrarily made and perpetuated. Others are spontaneous creations, revealing a tendency to follow the lower, more intimate levels of consciousness. Lipps (16) distinguishes three zones of the egoistic consciousness. The first involves the activities of willing and thinking; the second, the awareness of the physical body; and the third, the world of persons and things outside of the physical self. The second of these zones is the mediating ego to the not-self, whose functioning in this capacity, although always a fact, is soon lost to the consciousness and the ego comes apparently into immediate relation to the world beyond it. Now, the consciousness of another self is gained by the same mediating ego, and through the sensible qualities of the mediating ego of the other self. But this extension of the first ego into the regions beyond it is due to the development of the individual self. And the extensions of the ego with its interests and sympathies to larger and larger groups of other selves is the result of the process of education. The savage is capable of only a limited extension of his mental and social horizon. According to Sutherland (30) only races which are capable of union have succeeded in perpetuating themselves. "The lower savages," he says, "combine in hordes numbering from twelve to eighty, the average being about forty." The 'middle savages' are capable of combining to the number of one hundred and fifty, the 'higher savages' to the number of three hundred and sixty, and the remaining classes range from the 'lower barbarians' capable of living together in towns of a thousand to the 'lower cultured' with towns of six million inhabitants. To become capable of social intercourse with a large group, the individual needs besides sympathy a certain power of abstraction and generalization to adjust language forms to the comprehension of any or all the others of the group. To become a citizen of the world requires a culture and training of which not all are capable. In all but the rarest cases does it require effort to acquire and maintain such a power of communication. The majority of any group are capable of entering into full communication with only a limited number of the group. Even the attempt to transmit thought to one hearer often fails from the psychological nature of the process. For the speaker's language rises out of specific imagery which the same language fails to yield in the hearer's mind. The symbols of language may be transmitted, but not their specific content.

Besides lacking the power of abstraction and generalization to adjust forms of language to the comprehension of the

whole group, the normal individual has a strong instinct for privacy, shrinks from the gaze of the crowd, and avoids a free revelation of his individuality. And this fear of self-revelation varies with the size of the group. In the largest groups the individual's inhibitions are strong and numerous; in the smaller groups, other things being equal, they are few and weak. It is only as a member of his family that his individuality allows itself full play. Even in this group created by the most fundamental instincts, there are subdivisions. The parents have certain interests the children cannot share, the older children such as the younger children cannot share. Even the individual personality divides into parts, one of which suppresses the manifestations of another. And all the forms which language takes run in some way parallel to these inhibitions and facilitations due to amalgamations and disintegrations based on common interests.

Variations in language are due chiefly to two classes of conditions, those of a geographical and those of a social character. The first of these conditions gives rise to dialects, which are also a fruitful source of slang forms. The rapidity of language change seems to vary with the density of population. In the sparsely settled country the tendency is to preserve the archaic, in the city to adopt slang. Both conditions are sources of an unconventional vocabulary. In fact, all the diverse dialects of a country, all the provincialisms and localisms, are liable to be drawn on to furnish the vocabulary of the unconventional.

Besides, the slang of occupations and professions is also a source of the unconventional. The tailor, the shoemaker, the sailor, the mill employee, the physician, the minister, the lawyer, each speaks a language peculiar to his class to a certain extent. When for some reason one or another of the trades or professions attracts general attention, words peculiar to it are given a certain currency, thus providing another source of the unconventional. The vocabulary of the slang of a profession or a trade may, therefore, through the force of peculiar circumstances or through the power of an individual, come into unconventional and finally conventional use.

The same may be said of what we call domestic slang. It is frequently found that a family has a language of its own. Only a few changes of languages in a family, if perpetuated and subjected to the natural laws of change would in the course of time result in marked localisms and provincialisms. Family slang undoubtedly does in one way or another modify and create novel forms of speech which tend to become "homely" terms of unconventional language. It may even be true that the most insignificant member of the family, the

baby, may have the greatest influence in the matter of introducing novel forms. For the baby speaks a novel language early in its life, and its influence on the language of adults as they converse with it in its own tongue is believed to be considerable. This is itself an instance of the unconventional, but it also affects the words and locutions that are drawn upon in the ever recurring tendency toward the unconventional. Infantine grammar may tend to regularity as in the case of *bad, badder, baddest;* but it also tends by analogy to produce irregularities. And slang follows both these caprices, saying *comed* for *came, goed* for *went,* as well as *snew* for *snowed, hove* for *heaved, praught* for *preached, squoze* for *squeezed.*

The several stages in the development of child language, according to Ament (2) and Gutzmann (8), are the cry, the lalling stage, and the word-forming stage. The question of whether a child invents a language of its own before it imitates its social and material surroundings need not detain us here. It will be enough to review the results of investigations made with respect to the influence of the child's language, whatever it may be, on the language of adults. It is a well known fact that a child language, developed from the parent's side, often grows up, a language fundamentally conventional with, however, so large a number of unconventional diminutives and terms of endearment thrown in as to become almost unintelligible to one not a member of the family. Ament (2, p. 33) emphasizes the child's part in the composition of the family unconventional, saying, "All the onomatopoeias and the language of the nursery in general are not the invention of mothers and nurses but of the generations of children of thousands of years, to whom the mothers and nurses have in this matter no other relation than to imitate and transmit what the children offer." Wundt stresses (38) the other side when he says, "The mothers and the nurses who accommodate themselves to the child's stage of vocal development and the child's preference for sound duplications are the real inventors of the child language." Whether we agree with Wundt, Meumann, Idelberger, Stumpf, Stern and others, that the child's language comes from the mother and the nurse, or with Ament, Lindner, Strümpell, Taine, Sully, and others, that the child is original in its early language, the fact remains that from one cause or another there arise here transformations which may at some time be the source of an unconventional vocabulary. That through imperfect imitation of sounds in the surroundings the child often produces novel effects, is not disputed by any one. These forms are taken up and repeated by the elders with

humorous and homefelt emotions. The transformations may be slight, as when produced in the later stages of development; or they may produce in the earlier stages forms that no one can trace to an original. For example, it would not be supposed that *notis* is derived from *orange, turt-muddles* from *mud-turtles;* that by special association *Katze* and *Stuhl* should be called "*guck*" as reported by Wundt, and that the large number of forms repeated by Stern (29), including their derivatives, could have any originals in the conventional language. Numerous illustrations of transformations of words and spontaneous language are given in "Studies of a Child" by Chamberlain (4). Among many hundreds of unconventional designations applied to the baby by members of the family, reported by President Hall (11) from answers to a questionnaire, were names of animals, plants, food, characteristics of mind or body, names of supernatural beings, names of sounds, fictitious names, and alliterative combinations of miscellaneous and unknown sources. A few of the more original are pinkie, giglamps, periwinkle, peep o' day, brick-top, frowzle-top, lunky, yahoo, wobbler, nincompoop, roly-poly, nizzle-nozzle, niperty-tuck, mumblety-peg, and sniggle-fist.

The humorous side of the nickname and its association with the spirit of good-fellowship appears to-day in school and college life. It is regarded a mark of popularity to have a nick-name, if given from motives of cameraderie. These names are preferred in the social intercourse of the ball-field and the study-room. States and cities, as is well known, also have names for unconventional uses. The impulse to put off convention seems as natural and instinctive in language as in any other form of expression. The escape to the unconventional seems like a refreshing change to out-door life from the constrained and stifling atmosphere of convention.

Besides, there is the slang of students, the slang of the sporting world, and, in general, the slang of the street. Each of these has its own peculiar conditions of growth and origin, and also its own peculiar way to crowd its words and idioms into the vocabulary of one who occasionally puts off the conventions of language. The slang of the street grows up where clerk meets clerk, laborer meets laborer, to talk over matters of common interest. Sporting slang has its origin at ball games, the race track and on all occasions where stakes of one kind or another are set and the emotions are stimulated to their highest pitch in artificial ways.

The by-word, or sentence slang, was originally an unconventionalism with a humorous origin. The type illustrates the fate of much slang. These sayings had at first a well-

understood origin. In time they retained only their emotional association, losing their relation to what called them forth. There are many such phrases now used unconventionally with only an emotional force as indicated by the fact that those using them recognize in them no other meaning. They give a "Roland for an Oliver," "rob Peter to pay Paul," "fight like Kilkenny cats," and "grin like a Cheshire cat." And yet they do not know a Roland from an Oliver, and attach no significance to Peter, Paul, Kilkenny, or a Cheshire cat. This last has been changed in some parts of the United States into "Jersey" cat and in other parts to "Chessy" cat. It makes no difference whether this refers to the design of a cat's face used in Cheshire to stamp butter pats, or to any other cat so long as it is a cat that grins. The ideation may be narrow, the emotion requiring only a slight thread to hang to. The "Cheshire cat" motive has become as general and indefinite as the phrase familiar among children, "He grinned *like everything.*" Another illustration of the same thing is "to look nine ways for Sunday" (at a loss to know what to do). This is effective even though we don't know that it is derived from "to look two ways." With all its force it does not appear what Sunday has to do with the phrase, as it would seem any other day would do as well. After reflection, we may find that not to look for Sunday rather than any other "common" day would indicate a lack of intelligence; as of all days in the week not to be able to see Sunday would seem stupid, indeed. But it must be remembered that the thought the phrase yields is put into it after reflection sets in and does not appear in the emotional complex of actual language. The less essential parts of the phrase slough away and finally leave only a word or two to carry the emotion it may be intended to communicate.

The same principle applies apparently to words used in a variety of connections, many of which seem most inappropriate. These overworked words may belong to conventional or unconventional language. The fact is that here too the emotional intonation is of prime importance and the idea to be communicated negligible. Expression in this form is often limited to a few favorite words. It is primarily language for the ear rather than for the eye. It is this kind of language that to some persons has the characteristic marks of slang and that is much condemned by those who emphasize thought-content in language.

In this connection profanity might be mentioned as contributing a large number of words of hackneyed slang. They also serve for the expression of emotion rather than the communication of thought. However, they are not always in-

tended to be heard, and are often used inadvertently and unconsciously. In their form is revealed a strong inclination to conceal their meaning, for the vocabulary of profanity is characterized by various disguises of derivation.

The cartoon is also a source of slang. Slang is often practically the cartoon in words. It is safe to say, too, that the cartoonist often takes his cue from a slang phrase. Again, the story may be a source of slang. Slang phrases illustrative of this are "put me off at Buffalo," and "waking up the wrong passenger." Inversely, it is possible, too, that a slang phrase may suggest a story.

Another source of the unconventional, altogether different from those already mentioned, is what might be called cryptic slang, or the cant of concealment created by thieves by spelling original words backwards (back slang), from the middle outward (center slang), and by the use of rhyming words (rhyming slang). Tramps, also, are said to have a secret language, and so do the gypsies whose vocabulary (3) is derived mostly from Sanscrit and other Indian dialects as well as from the nations they met in their wanderings from the East. This is an artificial kind of slang created in mechanical fashion in strong contrast with that which rises in spontaneous activities.

Language requires groups for its creation, as it is conditioned on social environment. The conditions of group life with common vital interests is necessary for habituation to forms, which language requires. That language forms may take hold of the consciousness, they must accompany emotional reactions. This may occur in two ways: first, through the immediate experience of the individual, and second (what is almost as effective), through *Einfühlung* of the mediating ego of another self. The opportunities for these reactions occur most favorably in the smaller groups in which there is a close relation to the fundamental instincts; such as the family with its homely affections, its honor, its pride; the trade and the profession, in which the individual has his living to make and the honor of the group to maintain; the sport, in which there are both natural and artificial stimulations of interest. It is in these smaller groups that the individual spends most of his time, and here his language becomes habitual and is accompanied by mental and physical activities of the intensest kind. It is in the feeling reaction that language forms take root and persist long after the individual has outgrown the interests which imbedded them in his memory. The groups also provide other favorable means of rooting language in memory, for they occasion a natural repetition of the forms and their numerous associa-

tions. Compared with the language formed under such conditions, the language of the book and the study is to many, probably to most, people an unreal thing.

To those engaged in the same business or trade there is a material means of communication near at hand and possessed in common. The immediate external world, whatever it be, furnishes the most natural means of language. Under such conditions there may be several motives for extending a vocabulary; one is, the rise of the feeling of familiarity with the existing language and the consequent desire for relief in novelty; another is a deepening interest in the material which leads to a growth of ideas and a corresponding increase of vocabulary. To the layman who has only a limited interest in a special line of work, such an increase of vocabulary is not necessary. But when through a profession or a trade, a commotion is brought about in society as a whole, when the public is aroused and becomes acquainted with the affairs of that profession, then the conditions become favorable to a transition of the slang of a class to the slang of society. This has happened in this country when the public attention was drawn, for instance, to contemporary wars, polar expeditions, the conflict of labor, the insurance scandals, municipal corruption, and the graft of big business. The use of class slang becomes general also through the more normal and constant force of good-fellowship which operates at the points of contact between the various groups as they meet individually when pursuing their several vocations.

The same thing is well illustrated in a popular sport. The base-ball enthusiast, who knows the game and gets excited over it, naturally has a different attitude to the language used on the ball grounds from that of the man who does not know the game. To the latter the many synonymic phrases used in the game seem so much mere language and slang. He sees only one way of hitting a ball and probably there is only one that he can achieve. But the enthusiast sees the same thing in many different forms and colors. Various shades of emotion strive for exact expression. It is possible to have all these expressions for hitting a ball with attendant circumstances: he *pummeled* a liner to Devore, *larruped* a home-run to right, *banged* the ball on the nose, *punched* a hit to right, *smashed* a drive, *whacked* a grounder, *slapped* an easy grounder, *planked* a sizzling one, *spiked* a one-base shot to centre, *rammed* a single to left, *lammed* a single past Larry's ear, *slammed* a single to centre, *whaled* a home-run, etc. A hit may be called a jab, a rasping single, a peppery grasser, a pop fly, a homer, a horse-shoe drive, a dinky fly, etc., according as it varies in length, speed, motion, the sound

it makes, or the curve it describes. All these varieties are of interest to one who knows the game and follows it, and he must have fitting names for them. Whenever in history an interest grew up in any sport, as in hunting and hawking, a vocabulary grew up and had its influence on the general language to the same degree that the popularity of the sport became general. It is the same with the synonymy of any of the languages whether of civilized or savage races (12); the synonymy follows the liveliest interests.

Unconventional language is in a continual flux, for all words that pass from one class to another or become generally known are old words in disguise. They seem new and serve the purpose of new ones, but as the philologist Pott declared (quoted by Max Müller in Science of Language), no absolutely new word was ever created in all the history of language. The composition of new words from old ones shows, however, different degrees of originality. Words made by rule, with a deliberate purpose, like learned neologisms and cryptic slang, are to be regarded less original than those that appear spontaneously. In all cases of slang of concealment the method of disguise is known by members of the class. In the case of a coinage of a scientific term the motivation involves the impulse to form a rational association of word and idea. All that any coinage needs is an acceptable *initial* association, a small dowry of reasonable content to get a start with, it may afterwards have ever so checkered and uncertain a career. And this is because to begin a career, it must be acceptable to at least two persons. As the first class of coinages illustrates the operation of successive association in which the idea is joined deliberately and arbitrarily to a chosen word, so the second is an illustration of simultaneous association. A good illustration of the latter (35) is the naming of a craft to which on being launched a bystander called attention by exclaiming "*How she scoons!*" The craft at once became a *schooner* and has kept the name. In such a case some individual is the first source of the word, but it lives with the crowd. In this particular case *sc,* found also in an archaic dialect form *scun,* may in some way have had an influence on the coinage. The *sc* as in *scat, scoot, skate,* and other words with initial sibilations connoting motion, meant here a rapid gliding, and the continuous *oo* and the liquid smoothness of the final consonant was instinctively felt as the fitting designation of the thing.

In spite of the fact that any one may readily coin a word, not one in a hundred thousand succeeds in making a word current. Deliberate attempts have been made by many writ-

ers and scientists but with only indifferent success, as may be inferred from W. L. Mead's account of coinages (19) that have been made. And this is not surprising when it is remembered that we are not yet entirely free from the notion that the name is a part of the object. Among savages the name *is* the object and to pronounce it is the same thing as to touch the object which it designates. To give an evil thing its bad name is to hurt and offend it and invite reprisal; hence the well known euphemisms in all languages. The naïve attitude of the peasant to the relation of word and idea is illustrated in the remark that is reported (34) to have been made in admiration of the feats of astronomy: "I can understand how the astronomers can measure the distance to the fixed stars, but how they ever found out their names gets me." It seems like creating a thing to create a new word. The mountains and rivers of a country keep the names given to them by the conquered races. If the Indian name was Susquehanna or Mississippi, then that must be the name of the river.

The words of ordinary use are not intentionally created. They rise spontaneously, and are recognized as new after they have been spoken. In its essential nature speech is rooted in the emotions. The sounds a child makes before the impulse to communication sets in are all tones in their native emotional colors. They fit like the skin. The child acquires a large repertoire of sounds before it begins to echo the sounds of the environment and imitate with lip movements the oral element of expression. Soon gesture and facial expression are added to the association. In the new complex, gesture assumes an important demonstrative function in that it visibly orients sound, lip movements, and facial expression, which were at first purely imitative, to the objects to which they belong. Since the sound of words and their corresponding objects vary much more than the gestural elements of the associations, the latter through more frequent repetition gradually recede in importance from the consciousness, and soon become automatic, and finally may lose all but their psychic component. The impulses to all these activities in the child arise in feelings of pleasure and pain. They are the first and continue for a long time to be the sole determinants of action. In the course of the development here briefly sketched the child experiments with every variety of sound and form. There are repetitions and duplications, abbreviations and elongations, assonances and onomatopoeias,—there is pleasure in the language process for its own sake. The adult himself often playfully reverts to the plane of childhood, either in mimicry or from some other

motive, and juggles with the sounds of words. Certain elementary sounds come to represent certain emotions because they accompany those emotions more frequently than any others. Hence, when the emotions appear certain elementary sounds appear with them, and they may combine in new ways to form new words. But every candidate for acceptance into a vocabulary needs the support of many persons to give it a permanent vogue. One of the observers in this study who also assisted in gathering material reported one slang usage that went no further than the original utterance of the person using it. It was as follows: A mother rebuked her daughter saying, "You are going all to pieces," the daughter's face flushed as she replied, "I am not *piecy*." Another case reported was a new use of *sail* for a hat. A man and two ladies turned the corner of a city street where the wind was strong. It caught one large hat at an advantageous angle. Some one said, "Hold on to your *sail!*" Neither of these uses lived. Both were borne to the consciousness on streams of emotion. In both cases the words came up unconsciously. Another instance of an original word-form reported by one of the observers is the following: "I entered the kitchen the other evening and seeing a tin of gummy, stodgy, home-made candy, I at once exclaimed, spontaneously, 'Well, I am glad to see a little *goolush* around the house.' The descriptive adjective *stodgy* also came spontaneously, but I fancy it is a word I heard before." The word *stodgy* which the observer does not remember having heard before is used in The Mill on the Floss to apply to a distended pocket. The observer's use is dialectic and colloquial in England and Scotland where it is applied to a thick, stiff substance, including food; heavy, cloying, satisfying, also clogging, sticky. How this use got into the mind of the observer, it is impossible to say. As to *goolush* there is no such word on record. The more original effects in word composition of adult language may be due to a sort of disequilibration of mind through emotional stress or fatigue. In such compositions as *strambling* for *strolling* and *rambling, plodging* from *plodding* and *trudging*, the syllables were jumbled together because the mind used its available energy to hold the idea and nearly lost the sound association.

The number of sounds that can be made by the organs of speech is indefinitely large. But each language actually does contain only a certain limited number of phonetic groups. There could be unlimited variation in English speech to satisfy any caprice however unique and individual it might be. But the range of individual variation is limited by social restraint. The experiment has been tried to coin words

simply as words and without reflection as to meaning with the result that the observer finds it easy to bid syllables to rise in his consciousness and unite. But when instead of a simple unreflective coinage the observer is to communicate an idea on the spur of the moment through a coined word, the process is immediately complicated and he finds himself under the immediate necessity of compounding his idea with a word compounded of the spirit of the individual and of the social self. He instinctively uses elements that are already familiar and fits the word into a familiar context. The rise of an unconventional form of expression requires individual initiative, a social atmosphere unified by a common interest and a common focus of attention, and concurrent emotion of a favorable kind.

There is a time when language rises in spontaneous fullness but there is also a time when children become interested in things rather than words and when their prime law of life is to get the most with the least effort. At this time they read much and say little and express themselves in the easiest way. Gesture language with nodding and shaking the head is used, without words. This is the age of abbreviated syntax, and short-cut slang. This seems the very opposite of voluble slang discussed before. Both these variations from the standard usage are characteristic of youth. Age and conservatism and convention seem to belong together. Gauchat (7), in his study of the phonetic character of the dialect of Charmey, Switzerland called those ninety to sixty years of age, the first generation; those sixty to thirty, the second generation; those thirty to —, the third generation. His results show that in the first generation the phonetic laws are more or less latent, to appear irregular in the second, but "se repandre triomphalement dans la derniere." The returns from a questionnaire sent out by President Hall (5) in regard to the prevalence of slang among school children show that the curve of slang begins low at nine, rises very rapidly from eleven to twelve, reaches its highest point at thirteen but is still high at fifteen, then falls rapidly to eighteen and twenty-one. An investigation (20) of the usage of the high school students of Madison, Wisconsin, revealed a larger vocabulary of slang in the Freshman than the higher classes. The facts are well known and it is no assumption to say that youth in the limits set by Gauchat's third generation is the age of the unconventional in language as in other manifestations of life. In spite of the repressions of conventionality, the spirit of youth overleaps all bounds (9), gives vocal inflection a new range, forms new phonic variants, and cuts out new channels of speech.

The unconventional language of any period reflects the social and material environment of the time. Conservative use is slow to adopt a new imagery, yet theoretically, a language which reflects the immediate environment has the advantage of freshness as well as intelligibility. The imagery of mountains, trees, land and sea, is always with us. A language that reflects things that change tends to become stale. Among the happiest effects of slang are such as have been produced by comparatively recent American writers who have transferred the material of language to the field of improvement in industry and advance in science. This tendency gives us such forms as a live wire, ready-made youth, to give the shut-off signal, to throw in the high-speed thought-gear, to turn on the lurid language, to lose the combination, to ring off, to speed up, to pull wires and lay pipes, to put the brakes on, to shut off steam, to flag one, to switch the current onto one's self, to put the Teddy sign on something (to mark as false). The last presidential campaign gave us "bull moose," and "moosette," and the reputed characteristic of the people of one of the States "who want to be shown" gives us "in this matter, we are all Missouri."

Many of the usages here cited are not yet to be found in the dictionaries of slang. They are still near their original source. Now, much of the slang of the dictionaries is such as has had at some time a limited vogue but is not now as a rule to be traced further back than to a social group among whom it was current. The way of life of some of these groups is itself taboo, and puts the tag of the forbidden on their vocabulary. Here the question of formal incorrectness of phrase or far-fetched association need not enter into consideration, for the unconventional life described by the words marks them at once as vulgar slang.

Much of the slang found in the dictionaries is relatively fixed and hackneyed. It represents that part of unconventional language which has gained favor and has often been repeated in a limited group but for some reason has never become part of the standard language. It has, therefore, acquired a character whose psychology may be investigated. This slang vocabulary shows what are the favorite themes, what are the special interests of slang that gains a temporary foothold in the dictionaries. Recurring to a principle referred to before, a large number of words on the same theme does not indicate useless repetition but a synonymy of ideas; it reveals something like technical specialization, interest and analysis, a perception of the finer shades of distinction which come only to the initiated. Judging by the number of words found in the slang vocabulary, its interest centers largely in

the gambler, the thief, the drunkard, and the libertine. If the generalization be drawn more widely, the vocabulary shows that money and the sensual indulgence which it purchases are the dominant interests of this kind of slang. On the other hand, it ignores all that belongs to the routine duties of ordinary life; it does not characterize the humdrum and commonplace. It has few words for work; indeed, the word work itself means to steal or to deceive. There is little in the vocabulary to suggest naiveté, innocence, and spontaneous playfulness. It is purely unsentimental. It castigates every kind of excess of sentiment or sensual indulgence. Although its interest centers largely in sensual indulgence, its attitude to all who show a weakness either of a moral or a mental kind, to all who are unheroic, is that of a "Dutch uncle," whose every word is reproof. There are more than five hundred words or phrases in slang relating to the possession or deprivation of money. The present writer collected up to four hundred and fifty without by any means exhausting the supply. There are hundreds on games and gambling, which could be classified also under money. On eating and gluttony the writer's collection, which is incomplete, numbers four hundred. On thieving and allied roguery there are not less than eight hundred. Farmer and Henley's dictionary alone contains under the head of "*thief*" between four and five hundred synonyms. The slang vocabulary on money is itself relatively prosy and commonplace. There are many names for money which must have gained currency on account of the peculiar influence of the persons first using them or some peculiar association in the place in which they were first used, for they seem simply names without any apparent reason for their existence. There are others suggesting appearance, as, shiners, tin, browns, buttons, chips, bluebacks, the long green, green-goods, shad scales, canary, glistener, cart-wheel, etc., etc. By a sort of irony slang characterizes what is so hard to secure by names for the most commonplace things, hence, rocks, brads, dough, dust, clinkers, horse-nails, bones, hard-tack, soap, flour, hard-stuff, pap, rivets saw-dust, shells, shot, etc., etc. Other epithets in which the association lies deeper are, the needful, the wherewithal, ballast, grease, honey, palm oil, salt, tonic, etc. A few of the names are so strange in form as to suggest something rare: scads, mopus, rhino, tlac, dooteroomus, tusheroon, mejore, etc., etc. Although the interest of slang in money is shown to be considerable, money itself seems too prosaic for unconventional language in its most characteristic and interesting forms. Here as in other themes its interest lies chiefly in excess. Recklessness, miserliness, acquisitive-

ness, come in for its scorn. To fool, potter, muddle, fritter away money, to be a tight-wad, to be tight-fisted, to be a skinflint.

Slang characterizes without mercy physical defects and peculiarities, and infirmities incident to age. It also castigates all forms and phases of stupidity. It sends one on a sleeveless errand, for pigeon's milk, a straight hook, or the diary of Eve's grandmother, and thus blambustercates, bamboozles, bilks, fakes the kidment. It knows how to flim-flam, to flummox, to gild the pill, to gravel, to gull, to haze, to jimify, to jolly, slumguzzle, to soft soap, to spoof, to string, to stuff, to sawdust, to take in, to work the poppycock racket on any daffy squirt or dotty chucklehead or dippy mushhead, on any crazy kioodle or concatenated chump.

Although slang is always breaking with conventions, it is especially severe with those who have idealistic tendencies. It ridicules belief in what is generally regarded as impossible as a mere figment of the imagination or a delusive hope. There are air-built schemes, air-mongers who attempt to square the circle, to wash a blackamoor white, weave a rope of sand, extract sunbeams from cucumbers, set the river on fire, catch a weasel asleep, teach a pig to play the flute, catch the wind in a net. A person who looks to the future for the fulfillment of his hopes has maggots, bugs, wheels in his head, sees the flying Dutchman, the great sea-serpent, or dreams of the land of Prester John.

Slang tends to exaggerate perfections as well as imperfections, but in the latter it is particularly rich and extensive in its vocabulary. In characterizing quick action it is summary and direct, for the slow and uncertain it makes derogatory comparisons. Vanity, pride, and hypocrisy are the usual targets of its scorn. Qualities, good or bad, are more than superlatively characterized. It produces its effect by its free range over all the field of the familiar and the contemptible and selects such an imagery as shall not alone be readily conceived but also intimately felt. It is particularly acceptable when it hits off an evil and is applicable to the other fellow. It delivers blows and is capable of checking abuses. It prefers the abrupt and the shocking. It is superior to accepted use through its emotional force. It almost invariably makes implications of similarity between persons and the animal world and the disgusting or immobile or inert. It is peculiarly adapted to excoriation of abuses which come through somnolent convention, custom and habit, to social and communal weaknesses, to formalism in religion and politics, to sentimental dreams of unrealities, in fact, to all the forms and features of conventionalism.

However, it does not manifest a consciousness of purpose. It has results simply by being what it is. An investigation of the vocabulary on drink will better than any other reveal something of its peculiar character. Intoxication through drink does not itself alone stir the imagination of the subject, it also appeals to the imagination of those who see only the uncertain and often unexpected result of drink. It is a well worn theme in all literature and the slang vocabulary on strong drink is unusually rich. The state of intoxication is itself favorable to the creation of some of the most characteristic slang expressions. It extends the limits of emotional excitement far above and below the average, ranging in the field of the superlative and often showing a clearness of penetration, a happy abandon, an unprejudiced candor, a sense of individuality and personal immunity, a heartless precision of language that "madness often hits upon." The language of a man in liquor seems the very antithesis of reflection, and it is plausible to suppose that the individual source of many of the slang epithets on this theme emanate from alcoholic erethism. The social effect of a spree is to raise individualities while it reduces the common sense relations. The most effective of the bar-room epithets are repeated and gain a certain currency, eventually finding their way into the printed collections.

As the vocabulary on drink and drinking is probably the fullest and certainly the richest of all the themes for which slang shows a preference, a somewhat more extended investigation of the impulses involved is desirable. It is, of course, to be taken for granted that slang utterance, especially considering the conditions under which it usually appears as indicated above, is a spontaneous manifestation of unconscious processes. The atmosphere of gay good-humor, and lack of deliberation which conditions its rise, need not be further considered. And the vocabulary on drink is large enough to offer something like a complete gamut of expression on a single subject. The writer's collection of more than a thousand words will reveal the possibilities of slang in so far as it can be inferred from the synonyms of a theme. The vocabulary shows a wide range over all the subjects related to drinking. It describes the drunkard's appearance in considerable detail; it has many names for each of the different kinds of drink; many names for the place in which liquor is sold; it comments on the drunkard's actions, interprets every movement he makes and follows his mental and physical states from the time he feels a "spark in his throat," until he is "pickled" and "at rest." It involves condensation, comparison, exaggeration, positive and negative, re-

pression by euphemism and irony, the realistic literal and the brutally coarse.

Many slang words are taken from the language of the shambles and call to mind some of the vital parts of dismembered animals. It is these words numerously compounded which one uses to describe the portly appearance due to excessive indulgence. In these compounds the recurring sounds of *s* and *z* suggest the sizzing, foaming beverage and call attention to all the disgusting physiological processes involved in drinking to excess. Sow-drunk, swine-drunk, involve comparison with pigs wallowing in filth. A swill-pot involves comparison with a receptacle for waste and the body is regarded as inert and immobile down into which things are poured. Suck and sucker are numerously compounded suggesting a weak and helpless doting on drink.

Sometimes it reveals a Gargantuan exaggeration expressing a wish for a throat a mile long and oceans of drink. To imbibe is to take a shove in the mouth and to irrigate, to take liquid fire, bottled earthquake, and chain lightning. Or again, the words are much underdrawn in order to exaggerate quality. Now a drink is simply described as a taste, a smile, a nip, a nipperkin, a thimbleful, a toothful, dew-drop, or only something damp. In the various states of intoxication, the victim now sees large, now small.

Sometimes long, dignified words somewhat conceal meaning in form, showing a tendency to repression rather than to revelation and exhibition. Now the drunkard is a potator, a borachio. He is pongellorum, hiccius doccius, palatic, has a touch of boskiness; to drink is to nippitate, to hit up a libation; to be drunk is to be obfuscated and tosticated.

Again it names drink by its result with downright literalness calling it misery, poison, soul-destroyer, family-disturbance, blue ruin, and hell-broth.

Sometimes the throat and mouth are compared to things lifeless and inert and the process of drinking is represented as purely mechanical. The receptacle for drink is gutter lane, beer street, common sewer, drain, funnel; to drink is to sluice the dominoes, the ivories, the red lane.

It describes all degrees of drinking and drunkenness in mild and severe terms. The drunkard is thirsty, tries a smile, draws the cork or cracks the bottle, takes a nip or wets his whistle, sluices the gob, looks lively, becomes mellow, is in liquor-pond, is ramping mad, tangle-footed, and laps the gutter. In his worst state he has the gallon-distemper, the barrel-fever, the blue-devils, the jim-jams, the jumps, the shakes, the triangles, and the uglies, and finally sees snakes and pink spiders.

However, the large majority of terms used are repressive and euphemistic. A man in liquor has a touch of the brewer, a drop in the eye, has a guest in the attic, is full of Dutch courage. A drink is a morning rouser, a reposer, a sparkler, a rinse, nectar, French cream, caper-juice, a revelation. The drinker is afflicted, all at sea, a bit on, concerned, disguised, in his altitudes, exalted, gilded, glorious, salubrious, chirping merry.

Another important class of words assumes a medicinal value for drink. Here drink is an appetizer, a digester, invigorator, refresher, settler, soother, warmer, toast, medicine. Drink inspires also certain qualities making a person pot-sure and pot valiant, and as indicated by forms of invitation to drink, it suggests the attitude of defiance to all remonstrance, admitting that it is deathly and willing that it shall be: nominate your pizen, let's drive another nail into the coffin, let's hide some more ruin.

In some cases the association is far-fetched and the ideation narrow so that its relevance is no longer apparent; in others, a part is selected to dominate the whole process of drinking with a penetrating insight. The doting toper looks through the glass, reads the makers name, dips rather deep, bites his name in, dips his beak. A drink gives nature a filip, paints the town red; a drunken man is a ship in full sail, with a full cargo on board, carries a blossom nose, is an ensign bearer, with a flag of distress. The place where liquor is sold is a devil's house, a gargle factory, a roosting-ken, an O-be-joyful works, a wobble-shop. There are not less than twelve synonyms for beer, nineteen for porter, twenty-five for gin, and thirty-seven for whiskey. Slang makes a fairly complete inventory of the business as a whole, and shows up its results in damning variety. Its exhibitions and revelations of reality, its ludicrous insinuating euphemisms are effective because they *are* often coarse and indecent in imagery; because they *are* usually brief and direct; because they amuse, startle, shock; because they *are* different for whatever reason from what is customary; in short, *because they are slang.*

On the more serious subjects slang is often without the least trace of feeling or sentiment. It makes light of suicide, hanging and death. The epithets on hanging, although mostly obsolete, reveal a heartlessness that could have no place in conventional language. The victim dies of hempen-fever, has hempen-fortune, and leaves a hempen-widow. In the days when hanging for various reasons was common, the victim was said to go to the deadly never-green. The gallows were the sheriff's picture frame, the scrag-squeezer; where

the victim cuts a caper upon nothing, dances upon nothing in a hempen cravat to a Newgate hornpipe without music, has a hearty choke (artichoke) with caper sauce for breakfast, kicks the wind with his heels. In Western America he is roped for business purposes, telegraph-poled, yanked up, jerked away, and afterwards planted in the sage-brush.

Slang reference to the devil suggests that he is a familiar acquaintance of long standing. In nearly all cases he is referred to as old, and in something like an approximation to sympathy, he is given a relatively familiar Christian or descriptive name. There is no sign of doubt as to his personal reality. He is Old Nick, the Old One, Old Blazes, Old Bendy, Old Driver, Old Harry, Old Scratch, Old Toast, Old Goose-berry, etc. To the church and the clergy the slang attitude is as a rule irreverent. The minister is the gospel sharp, devil-dodger, fire-escape, snub-devil, gospel-grinder, the duck that grinds the gospel mill, and head clerk of the doxology works. It has, however, created *sky-pilot,* an epithet of considerable poetic significance.

In slang's attitude to death it differentiates itself most clearly from conventional language. Here is an individualism of the most undaunted type, a virile aloofness from all the sense of fear which the king of terrors inspires, a feeling of personal immunity from the all-destroyer; perhaps a pretense of indifference, a cheap linguistic bluff concealing and possibly diverting or catharsizing fear, like the small boy's whistling feat on passing a grave-yard at night. To die is to peg out, to go off the hooks, to lose the number of one's mess, to be put to bed with a shovel, to take an earth bath, to turn up one's toes to the daisies, to go to grass with teeth up, to mention only a few of the more characteristic phrases. It may be motivated by an exaggerated philosophical attitude to the inevitable, a means of summary dismissal of what in conventional thinking would be unpleasant to contemplate. Whatever it is, it is here that unconventional language reveals the most marked individualism.

Thus far our study has been limited to the creative side of the unconventional. Our inquiry has been directed to the motives, impulses, and conditions that give it rise. Excluding cryptic slang, it was found that the unconventional is a universal tendency both among civilized and savage races, that it is particularly strong in the young of all races, that it is an expression of the individual self as opposed to that of the group, that it seeks its material language basis in a fresh environment, that it is spontaneous and thrives best in an atmosphere of freedom and culminates in renaissance periods of history. Having made an attempt to discover

how it comes to be, our attention will next be directed to the effect it produces.

Analysis of the Slang Impression

Most persons consider the subject only from this passive, critical side, and slang is the popular description for all usages judged exceptional. There is no general agreement as to the nature and function of slang. To specific instances of doubtful usage the reactions of different persons are often widely different and the reactions of the same persons different at different times. In a total of two hundred and ten words which were presented in the form of a narrative paragraph, sixteen observers of Clark University regarded thirty as slang. But only one of the thirty was regarded as slang by all the observers. One of them found a total of only three; another, a total of twenty-seven slang words. The individual judgment of the observers seemed unstable, so that the writer believed the results would not be the same if the experiment should be repeated. Accordingly, a month after the first test was made, new copies of the same paragraph were handed to the same observers, with the request that the slang words be underscored. They were not informed whether or not it was the same paragraph they had seen a month before. The result was that the most consistent observer who in the original test had marked twenty-seven, now marked a total of twenty-five, having added one and dropped three from the original number marked. Another, the most unstable, who originally marked seven, now took away three from the original number, and added three. The question, therefore, as to what words are slang seems not only a matter largely of individual opinion; it seems subject also to the variation due to temporary attitude or mood in the same person.

It is in the incongruous associations exhibited in slang diction that words arouse in us feeling attitudes (22) which in conventional usage are made dormant by habit. One does not realize how strong a hold established language has upon him until he meets with a novel slang substitution. It can thus be shown that all the effects of language finally reduce to feelings of relation, feelings of congruity and incongruity of association. And it is to the level of the feelings that one must needs go in the endeavor to acquire any new forms of language. In the first stage one must hear the strange sounds, feel the muscular movements required in reproducing the consonants and the various degrees of tension and pressure required in rendering the value of the vowels. When the acquisitions of the perceptive stage are made contributory to

the performance of an act, the transition to the memory stage begins. After frequent repetitions and consequent habituation, only such and so many acquisitions of every lower process are used in the higher as are needed to attain the higher aim. The mind is utilitarian, subordinating all the perceptions and memories not needed in the achievement of a higher purpose to the field of the unconscious; in other words, there is a final elimination of nearly all but the motor phase of mental imagery and that is limited to a more or less latent rôle. Although imagery is thus subordinated, it still manifests itself as feeling or attitude.

In this stage all the conscious antecedents of speech are an aim (1), a will to speak, a feeling of suspense, and a sense of effort. The words take their places which long continued use has habituated them to, and there is a feeling for association and connection of words which only comes into consciousness when its usual forward flow is checked or interrupted. Ordinarily one knows neither before speaking the words he intends to use nor after speaking the words he did employ, so closely have the language processes adapted themselves to the various demands of speech. All one does is to begin and the words come in their predetermined order. This is presumably not accurate as an analysis of the process for all persons, for it depends on the degree of mental attainment and the specific aim of mental activity. Not all of the same age have the same powers and there are different stages of development in different periods of life. There is an age of "Anschauung" or perception, and memory and imagination, and an age of the memory of logical relationships. The mind adjusts itself only to the most immediate need, neglecting what is not useful and reducing to unconscious automatism of a relatively rigid pattern all that is ancillary to the aims usually in the focus of conscious activity. Language itself becomes condensed in the process of this development.

Language belongs on its own account to the perceptive and imaginative period of life. It is this time which is favorable to the rise of the unconventional, to the testing out of the newly acquired language powers. This is the period of narrow ideation and exuberance of expression. It is the plastic period of tolerance of change and love of novelty. In the later period of abstraction when there is closer equilibration of thought and greater economy of expression, a stronger passion for unity, the unconscious attitudes have become more rigid and the feeling for word relations more definite. This is a period of conservatism and intolerance of change.

It is due to this habituation to the form language usually

takes that it is possible for one to anticipate in a general way what the course of a person's thought will be. One knows at the very beginning of a sentence another person speaks, something about the direction the thoughts will take. And as it reveals itself more and more, the field of its possibilities grows narrower, the thought becomes more definite, the possible becomes the probable and ends in the actual, and the suspense of expectation keeps rising to the close because no part is complete until the end is reached. More particularly does one anticipate the language itself. There is a certain limited vocabulary to be expected but still more limited is the number of idioms used. The idiom, which has been called the characteristic style of race in expression, becomes most thoroughly habituated. Language is, therefore, most conservative in its idiom, less conservative in its word-forms, and least conservative in its word-uses. In other words, the form the expression will take is relatively familiar; the words to be used are not so readily anticipated, the uses to which the words are put admit of the greatest variety. Violation of the idiomatic form is, therefore, the rarest kind of innovation.

The slang impression as it occurs in the passive attitude involved in cursorily reading a paragraph is due to a conflict between the anticipation and the reality or it may be due to an agreeable surprise at the difference between the anticipated and the real expression. Consciousness comes into the closest contact only with the obvious aim of its activity. The process of reading among those practiced in the art has long gone by the perceptive stage. In the reading of ordinary matter in standard English the attention is directed to the end of the unit of thought, utilizing only the minimum of perceptive material. Even the imagery, particularly in texts not purely descriptive remains relatively unnoticed. Memory takes the place of experience and mere symbols the place of memory. The word-symbol has the same effect on the psychic process *as if* it were the experience. The common factor that remains in all the stages of the progress, however, is feeling which is throughout the same in quality even though it suffer diminution in quantitative extension. There is a feeling for logic which is also a result of use. It is possible by reflection to retrace the memory associates of the feeling, but without reflection the feeling though present is not readily accounted for. When one is asked why he regards a word as slang the reply is as a rule " I cannot tell why; it is simply a feeling." But the feeling is unusual and striking in the slang impression and its cause lies nearer the surface than that which goes with customary and conventional language.

The slang comes into the divined but unconscious automatic pattern and by its novelty either stimulates the thought process or interrupts the forward movement through logical or emotional incongruity. This may be illustrated graphically by a section of a circle of which *A* is the center, BC the arc, and AB and AC the limiting radii. The direction from point A is determined by the place the matter to be heard or read has in the complex of experience. The limiting radii mark off the field of facilitation. The initial attitude becomes progressively more definite. In a unit of material to which one has become fully habituated, progress from A is free and uninterrupted, the thought is at the focus of consciousness and the language as such away from it, suspense increases, comprehension only relatively complete as far as it goes, keeps closing in, until the unit ends in BC. If a new word is included in the language material, for the moment *it* falls into the focus of consciousness, leaves a gap in the thought, and the forward movement does not fully close in on the arc BC. It would be the same, of course, with any new word in any context. But with slang there is something more. The context indicates that the new word is gratuitous and the slang impression of a disagreeable kind involves the disturbing sense of the logically unjust and the emotionally unrelated. This feeling is strong in the case of words of familiar form. In every case, however, the fundamental cause of disturbance, or it may be of agreeable feeling, is in some maladjustment or happy accident of association which experience has made into a more or less definite pattern. In the following several such effects are illustrated:

"It was all I could do to keep my eyes off his suit."

"It was all I could do to keep my eyes off'm that trousseau of his."

"I said, 'You must not care if people stare at you; they always do that to strangers.'"

"I said, 'You musn't mind folks giraffin' at you; they always do that to strangers.'"

"My friend said, 'Didn't I see you earlier in the evening accompanying about the city a gay young fellow in a striking suit of clothes?'"

"My friend said, 'Didn't I see you driftin' around town earlier in the evening with a young sport in morning-glory clothes?'"

Slang phrases often possess a greater wealth of associations than others because they appeal to recent experiences rather than to dim memories. An object is named by means of one of a constellation of associations. The relation of this one association for which the object was originally

named, to the object, may be lost through borrowing by another language or through change incident to phonetic development of the word itself. The original associations of the qualities of objects and the immediate association of word with meaning are part of what we shall call the content. The sound the word represents is its form. Of the slang words to which reactions were reported, a few seemed hardly more than a sound, or visual percept. Others although new to many aroused associations apart from the associated meaning in the context, and on inquiry it was found that the elements of the association called up by a word were different for each individual questioned in regard to it, although there was agreement in regard to its meaning in the context. It is the difference in the character of the associations the word itself calls up that accounts for the difference in reactions to it. This is a typical characteristic of slang. Its original associations lie on the surface, and the form suggests no meaning except what is afforded by the context. Now, with words that are in accepted use the denotation and its train of associations are in possession of the field, the original associations being no longer accessible to ordinary conscious reflection. Philological science is concerned with the revival of these buried associations so as to increase the total number of associations and thus give them a stronger hold on the mind. It discovers the *raison d'etre* of the word and often unearths incongruities of association as capricious, irrational, and objectionable as any in modern slang.

The character of the slang impression often depends on the attitude of the hearer to the material source of the word or phrase. He may have a superstitious aversion to the source, whatever it may be, or he may be indifferent to it, or take a nature lover's delight in it. The cause of this difference of attitudes may lie in the deeper racial levels of the consciousness.

Words which produce the slang effect arouse associations which are incongruous and incompatible with those of customary thinking. As a result they arouse disgust or produce the effect of the illogical, or they may offend the taste simply through their novelty. But it is not until slang epithets are applied to persons that they become particularly objectionable. Their use now becomes a matter of morals. They lower the sense of human dignity and cause pain. It is this that de la Grasserie calls 'argotic metamorphosis.' It consists in three stages of descent. First, in applying names of the coarser movements and parts of the body to mental activities—somamorphosis; in the use of names relating to animals and their actions—zoomorphosis; and in the use of

names relating to inanimate objects—pragmamorphosis. It is only between companions whose friendship is unshakably secure that such epithets become humorous. The following are examples chiefly of the last two: To take one's lid (hat), to leak or work the sprinkler (to cry), to peel off the clothes, to swat one on the map (face), to be skirt-shy, to be parlor-broke, a rat and book agent terrier, a full-jeweled jay from the Middle West, an upper-case I with feet. However, epithets from familiar material sources may also be complimentary: a daisy, a jewel, two jewels, a honey, a bud, the stuff, a top-notcher, the main stem, the real thing. The same object may be associated favorably as, "He is some pumpkins," or unfavorably, a pumpkinhead, a big-bug and a humbug, a bird and a jay-bird. The favorable and the unfavorable may even be combined as in the slang paradoxes, white lies and clean oaths. Associations often radiate from a common center and may be either favorable or unfavorable to the original. For instance "horse" has given us one-horse business, horse-laugh, horse-medicine, to balk, to trot out, all derogatory; but also wheel-horse, horse-sense, a whole team (from one-horse). By cumulation this idea rises to a climax in wheel-horse, a whole team,—and finally as said of Grant in the Civil War, "He is a whole team, a horse extra and a dog under the wagon." In the same way beginning with "goods" slang gives us by cumulation: "Yes, you are the goods, the whole cloth, the whole cloth and a yard wide, you are the goods duty-free and half way to the warehouse in a little red wagon."

The choice of familiar gross material as the language basis indicates an intention to be clear, whatever other qualities may be lacking. This kind of slang, therefore, emphasizes the content, the idea associated with the word. It is dynamic and exhibits sureness of aim. In cumulations and exaggerations the effect is to magnify the associated objectivity and thus to increase the effect of the association. When the associated object is found in the familiar world around, a certain degree of stability is secured for meaning, for then consciousness can orient itself with objective certainty and there is little room for individual interpretation.

But slang expressions show a varying range of possibilities of individual interpretation. Making the class just discussed as representing the greatest degree of objective clearness the starting-point, we will follow the gradations of slang in the direction of emphasis on the content with increasing condensation and vagueness of the associated idea; on the other side, illustrations will be given showing increasing tendency to emphasize form with a gradual narrowing of the content.

Slang combines the imagery of several senses in the same epithet, producing a sort of synesthetic condensation: a dark brown taste, it was so punk it was blue around the edges, to be yellow, a large pale-blue time of it. Paranomasia occurs when several trains of association meet in the same word or in the same sound of two words. In "a rest-cure job" the focus of association is in *cure* and part of another word *sinecure*. "Nothing to do but her husband" belongs to the same class. In another class, the content is more indefinite. Joy-ride, and then some, to be too too, to start something. Why women are so, to be classy, and O, you Teddy, depend much more on individual interpretation as well as individual emphasis and inflection for their meaning than the class of expressions discussed before. This class of phrases could in many instances be colored favorably or unfavorably by means of accompanying gesture or degree of emphasis or intonation or all of these . "Thing" in "*that* thing" or "that *thing*" may have various meanings. "A smooth article" is equally equivocal. In a Reginald, a Mollycoddle, an Abigail, a Willie boy, Kitty Mauds, smart Aleck, A Percy job, Johnny on the spot, slang makes a quick transition from the particular to the general.

Going still further away from the objectively clear and definite class of slang words from which we started, we come to a class in which the central factor is not thought but an emotion and in which the language plays a secondary rôle. The words consist in disguised forms of *God* and other sacred names and usually all they contain of the original is the initial hard *g* or the initial syllable *je,* also various forms suggesting hell and damnation. As words they are meaningless and subject to much change of form, being only an attendant circumstance to an explosive form of emotional expression. The use of these words, when most characteristic, is utterly unconscious.

The analysis of the slang impression has thus far been confined to the imaginal content rather than the form of words and phrases, beginning with that of relatively definite objective reference and concluding with slang of a much condensed thought content and also slang forms of an expletive character like gesture and facial expression. The course taken has been from the definite to the indefinite, from the less subjective to the more subjective in thought on one side and emotion on the other, from a narrower to a broader field of ideational and emotional activity. The more definite part of this field seems farther removed from standard language than that of the ideationally broader and less definite. The more definite an objectionable association is the less easily

does it escape making a disagreeable impression. The less definite the imagery, within limits, the wider the range of possibilities of interpretation among different persons. And it is just in this that the form's chance of general adoption lies. If a word-use at once made the same favorable impression upon all it would not be slang; if it made an unfavorable impression in equal degree upon all it would remain fixed and immobile. It is the individual who looks on it with greatest favor that introduces it to conventional use. The class who hear it used for the first time probably come to think a little more highly of the word and a little less highly of the person using it. Gradually the objectionable elements wear away and it makes its way into the language.

Turning now from a consideration of slang forms made in the direction of a broadening ideation, a growing involution of form, the course now to be taken is in the direction of a growing accentuation of the formal side of expression which corresponds to a constant narrowing of the content. Expression here exists largely for its own sake. To be exuberant and redundant in expression is also a characteristic of the unconventional tendency. Language may become an object of play as well as things. Saws and proverbs are tampered with and revised to date. Maxims are echoed in rhyme: It's a long worm that has no squirm; put that in your boat and float it; smile and the world smiles with you, snore and you sleep alone. There are many verbose expressions and ironies like: he failed to connect with it, cherished some animosity, her clothes fit her intermittently, a nine-dollar bill. Negations and affirmations are often wordy: not on your life, not on your tin-type, not on your facial expression, not on your previous existence, over the left, in the neck, guess again, search me. Intensives expressing certainty are expressed in the most far-fetched associations: fan me with a brick, knock me down with a tooth-pick, wouldn't that jar the cherries on your Aunt Carrie's bonnet, wouldn't that wrinkle your raglan, jiggle your slats. To win the game is, to put it on ice, to frame an alibi for defeat. Sounds like a complete description (for I am he), to have sporting corpuscles of the crimson variety (a slang circumlocution for a red-hot sport), how does your corporosity sagaciate?—and this nonsense shades off into the very riot of language, "a refulgent and spasmodic flare-up," "a cataclystic swirl of catadioptric flashes," reminding of Shakespere's "equinoctial of quebus," and George Ade's "wollyopolis down on the gazalium." This last is the extreme limit, where thought-content stands at zero. The examples have illustrated a growing emphasis in the form with ever

narrowing ideation down to the merest verbal nonsense, just as before illustrations were given to show how a relatively clear content may be represented in one case, while the others shade off to a relatively more condensed, more indefinite and elliptic a character; in other words, beginning on the one hand with representative forms and ending with the non-presentative and again going from the representative to the more purely presentative forms. Beyond the limits on the one side is gesture, on the other mere phonetic instrumentation. In this whole range of expression conventional language occupies a median zone.

But there is a certain kind of consistency in the ideation of continuous slang discourse which these disconnected phrases and the rather incongrous combinations fail to give. The effect of a well-constructed story in slang is not unpleasant. The reader, in such a case, assumes an attitude of expectation for the unexpected and the striking things follow each other in kaleidoscopic succession. He feels the need of alertness not to miss any "quips and cranks" while in the more conventional discourse he leisurely anticipates and passes more rapidly over the page. In time the continuous succession of the startling and the shocking, the succession of hits, even though happy, tends to benumb the imagination and weary and jade the mind. The emotional tension produced by slang is greater than that of the more customary and conventional, and the mind in time seeks relief from it, the book is laid down for the more restful atmosphere of the commonplace.

Further, if we look at slang in the larger compass of the continuous story, and into the nature of the thought structure underlying the language, we find a kind of association that often characterizes slang. It is not differentiated from conventional language by the fact that it involves comparison, contrast, and the other kinds of association comprehended under the figures of rhetoric, all of which are psychologically reducible to association by contiguity, but by the unusual relation of the component parts of the association to each other. There is, not always but often, a far-fetched comparison, a whimsical contrast, a disproportionate part put for the whole, an irrational attribution of a cause, an unwarranted inference of an effect,—any malrelation of associates. Instead of involving simply a word, it may control the whole conception of a sentence or a paragraph. Ordinarily written and spoken discourse limits itself to the field of reality; it aims and strives to see things as they are. Now, the sense of reality, in the first place, prefers the near to the remote, the present to the absent. The remote

in place or time is potential with the impressions of unreality. In the second place, the organic forms of nature manifest a uniformity of coordination and symmetry of parts with which the individual and the race have become familiar. In the third place, there are laws in the physical, moral, and social world which experience has also made more or less familiar. In these fields lies, relatively speaking, the subject-matter of conventional thought, and here are the lines of equilibrium for action, thought and conduct, and they are the ultimate basis of the ordinary associations of conventional language. The associations involved in the mythic fancy of primitive man show a progressive development towards greater equilibration; the customary associations involved in the perception of reality have not always been what they are now. In the child they are naïve and innocent and experience has not yet brought them to the conventional pattern. In the savage they seem to be in a state of arrest. The making of associations consistent with the sense of reality is an acquired competence of mind, from the level of which one may revert through disease, fatigue, intoxication, dreamery or some emotional eruption to a more primitive state of mind, and approximations to it, that dissociation occurs with a corresponding weakening of the powers of coordination. Now, it is this kind of association that slang discourse *playfully* affects that the slang tendency of mind lets happen or that through emotional tension happens to mind. In clinical cases orientation may be totally lost, or there is little if any consistency to the matter. In nonsense verses there is at least the scheme of the verse and the rhyme, and often much more, to reveal a sane sustaining principle. In the ideations of slang there is at least the simplest organizing principle of temporal continuity, and often much more, to show the difference between mere fooling and the incoherence of insanity.

In "A gray-haired agriculturist took his youngest olive-branch *by the hand and led him* to a Varsity," the mixed figure is emphatically brought out by the words in italics, as if to remind the reader, by the exaggerating touch, of the initially conceived incongruity of relations. There is harlequinade exaggeration in "The salt tears trickled down *through an archipelago* of freckles" and "He was one of these mushy-looking, soft-spoken, biscuit-haired, white-livered, young wrist-slappers; with a complexion as *ruddy as a pail of lard, skim-milk blue eyes,* and a set of parlor manners that was as good as a correspondence course in etiquette just to watch."

The slang effect may be produced without a slang form or use, as in "The name she called herself (in the back of

that head of hers, with its strange derangement of hair outside and the stranger dreams inside) was Mam'selle Lisette Monet. The name her parents called her (in the back tenement, with the week's wash outside and a large family inside) was Lizzy Mooney."

A slang fancy may be expanded into a short allegory as in the following: "Just back of her and a little above her Constance, the change girl, sat aloft in a little parapet. She also was at work like a besieged chatelaine, getting her ammunition handy. Soon she would be plied with money and merchandise from all directions, and she must load money and sales-slips into the cartridges, shoot at the distant cashier, make up the bundles, receive back a shrapnell of change, and pass it down to the grasping hands below."

A word purposely misplaced may add its element of humor to the ludicrous character of other incongruities: "It's American womanhood's duty to marry home industries—and not be tempted to become the grande-dame of a duke or baritone."

Or there may be confusion of the facts of history with orthographic monstrosities: "Asks me if I ever heard of a duck by the name of Pansy de Lean. 'Sounds kind of familiar,' says I—'don't he run a hotel or something down to Palm Beach?' You're warm says he, but you have mixed your dates. Old Pansy struck the East coast about four hundred years before our friend Flagler annexed it. And he wasn't in the hotel business. Exploring was his business. He was looking for a new kind of mineral water that he was going to call the Elixir of Life."

Here we have come into the field of caricature and the cartoon. While the unconventional forms of slang language are not necessary to grotesque ideation, which is often expressed in standard English, it is as appropriate to it as a means of fully realizing the idea, as dialect is to local color in fiction.

In the last analysis the impression of slang whether through novelty of form or far-fetched use of words seems to be reducible to one fundamental psychic cause. Association of words with things will in time give words accretions of feeling because of our experience with the words and what they represent. Every departure, therefore, from what custom has made habitual will result in a conflict of attitudes (22), which may be agreeable or disagreeable. Any uncalled-for word, flashy emphasis, novelty of form, or colloquial phrase, may produce this feeling of incongruity.

The cause of our attitudes to words lies, of course, as a rule, outside of the words themselves; that is, word values

are *extrinsic*. In other words, their character is not due to themselves, to their own forms as much as to the things for which they customarily stand. "A rose by any other name would smell as sweet." But "rose" having been associated with the object is capable of arousing an image of sight and odor and inevitably a feeling, or in individual cases only a feeling. However, word-forms have an *intrinsic* value in some cases; they have a form peculiarly appropriate to their meaning.

Our feeling reactions to slang words may be due to the word as such, to the use it is put to, to the individual using it, to the group using it, to the thing tabooed to which it applies, or as we have seen, to the context in which it is found. The source of slang gives it an emotional coloring to which we react. The dialect of a locality or section of country affects us as strange, ludicrous and inadequate for serious purposes. It is not due to the word or the phrase in itself. It is due to the source from which it comes. The unconventional language of the family is reserved for the intimate life of the home and it is limited to family life as other private affairs sacred to the members of the household. The words originally limited to professions and occupations produce the effect of the strange and esoteric and in the humbler occupations they produce the same effect as the dialect of a locality. The feeling value of slang words comes out more clearly in connection with their origin in certain classes of society. The language of tramps, gypsies, and thieves, and that of the street, in so far as it differs from conventional language, causes an unfavorable reaction due to the vulgar circles in which the language is known to be used. Again, the coarser human enjoyments and common interests in which different groups of society may come to a common level, also give us a large body of words and phrases to which people react unfavorably on account of the things to which the words apply. Further, slang words and phrases used in connection with the great institutions of society and certain facts of life and death to which the conventional mind has a conservative attitude, arouses an unfavorable reaction due to the audacity which inspires them. Its use is the assertion of individuality against the character of that which conservative interests have guarded. Conservatism looks to the past, values the lessons of experience, and that which time has proved. It exercises restraint, limits its activities to the region of the average in conduct and speech. Slang is radical. It looks to the present, puts off restraint, and does not concern itself with limits in speech.

Our feeling reaction to words is strongest when the word calls up a clear image. If the thing associated is favorable, the word is regarded favorably; if not, unfavorably. Primarily, the determining factor is our attitude to the thing associated. In the former case the *Einfühlung* is positive; in the second, negative. Only words to which our *Einfühlung* is positive are acceptable in conventional discourse. In the second case, the more unmistakable the association aroused, the more definite the negative *Einfühlung*. Before the word is acceptable, for conventional use, this contrary *Einfühlung*, in other words, this aversion to the content of the word, must in some way wear off through change of form. Conventional language is full of instances of this process. An instance of which many might be given is the term "maudlin" as applied to drunk. An analysis of the word reveals a long forgotten association: Maud and *lin*, Magdalene, that is, Mary Magdalene, of the scriptural account, the connection of thought being in the idea *weeping*. The association of the idea, Mary Magdalene, with that of a weeping drunkard produces a conflict of attitudes. Slang words which present a clear content have for that reason an unfavorable prospect in regard to conventional adoption. If the content is more or less indeterminate, if it allows a certain freedom of interpretation, the reader can feel a favorable content *into* the word. A word whose original association is unknown would have only the aversion to strangeness against it. With use this would wear off and the word would soon produce the same reaction as the associated object. It would not come into conventional use, however, if the thing itself is taboo.

Slang will often be clear, even though it must be distasteful; it will be familiar, even though it must be coarse. Accepted use often courts vagueness for the sake of elegance, preferring the abstract to the concrete. A word's unfamiliar sound derived from a Greek or Latin base serves to reduce the force of a distasteful association and tones down its suggestiveness. But the diction of slang is unmistakably familiar because taken from the lower levels of life's necessities. The physiological processes which put man on a level with the animal world do not as called to mind in figurative language add to his dignity or support his feeling of superiority. Nor is the use of parts of the body as the material of figurative language (de la Grasserie's somamorphosis) due to reverence of the human form, for it puts them on the level of inert, passive things. It is realistic, naturalistic, unromantic. It produces the impression of too great nearness. Ordinary language like art presents things at a proper, comfortable distance. Slang imagery is 'under-

distanced' (3a), too intimate. It often chooses its means of expression from physiological processes, parts of the body, the senses that require contact, organs that have the possibilities of degeneration and disease; the animal world suggesting filth, disease and vermin; domestic animals with their stupidity and passivity; clothes, utensils, implements, tools,—all the familiar world around, particularly that which is oriented primarily to the contact senses.

While words, as a rule, are the passive accompaniments of a feeling, parts of trains of association, whose chief feeling nucleation is the thing for which the word stands, the word itself having been so often associated with the thing, finally comes to stand for the thing and is looked upon as an independent entity and is unconsciously accepted as the equivalent of the thing, or rather, as the thing itself including all the feeling associations that properly belong to the thing rather than the word. Accordingly, the word itself as heard or seen will arouse dispositions or attitudes of mind.

A word having once acquired a character in this way will transmit it to unfamiliar words that are similar in form. The new words will take on meanings due to the dispositions of the familiar ones unconsciously aroused in us. That is, the feeling association of the elements of the well known words induce the feeling response to the new ones.

Certain words associate themselves easily with a meaning because there is an appreciable meaning in their sound. They represent a class of words in slang which require a separate description. They are imitative, representing in their oral and auditory form at once the meaning they are intended to convey. Here the feeling value is relatively intrinsic. It is not transferred from the outside into the word, from the object to that which signifies it, but here the sign and the thing signified are one, a unity to which the consciousness readily gives assent. Among such words is *pap,* a food for children. It suggests a movement of the lips in eating without teeth. *Pooh-pooh,* expressive of disgust, suggests an expulsive movement of the breath. *Nip* suggests closing the lips over a small amount of liquor. *Piffle,* an expression of disgust, as if with something of a nauseous smell. A *snifter* suggests a short inhalation of an agreeable odor. *Bobbing* apples, a children's hallowe'en sport, suggests in the sounds of the word just what happens in the game. *Blab* with its sharp vowel sound capable of a sarcastic use suggests a movement of the lips when talking and involves contempt of the one to whom it is applied. *Gabby* is of similar import. All these words involve in themselves movements of the speech organs related intimately with the meaning they convey.

They are slang largely because they imitate by oral means of expressing contempt. In accepted usage words are never purely imitative. The feeling tone attaches easily to these forms because feeling goes readily with imitative motion. Words that imitate movements of the lips, chewing, speaking, breathing, etc., call attention to physical processes and thus fall in many cases a little below the level of conventional language.

In this class of words, *Einfühlung* (17) is a necessary process. In the class of words studied before feeling is put into the words through activities in connection with the things which they stand for; here the activity is in the word and involves it, making the word almost identical with the mental process which completes itself in movement. It is not strange that these words cling to the memory, for they are in the form which the impression they make on the mind assumes. They represent the closest possible relation between the word and the feeling.

Similar effects are produced by means of alliteration and assonance in which slang assumes a license forbidden to standard prose. Repetitions of consonant and vowel sounds and of stresses tend to function as certifying the idea. The repetition of a negative emphasizes the negation like the repeated shaking of the head. Likewise, the initial consonant of accented syllables when repeated follows the facilitated path and the thought the phrase carries gains an assent, an inevitable sanction that comes only with truth inherent in things. Slang gives to these forms its exaggerating touch, purposely overemphasizing the form of the phrases so that they haunt the memory. Alliterations are usually found in the slang books and the sporting columns: his dainty *tap to Tim* depopulated the bases, a glove-fitting straight-front flat, to get one's goat, the seven suffering sisters. The assonantal form is more popular: the land of ganders, lamp the lad in blue, ace of spades, that cooks your goose, to fly high, to shiver one's timbers, to know the ropes, etc.

It is the unconscious tendency to imitate that, all other things being equal, determines the choice of words for slang phrasing. It is this motive of imitation that in some cases, reduces the length of conventional terms to express abbreviation and summary action and in other cases lengthens conventional terms to express the opposite. It is this unconscious tendency to harmonize feeling and word that gives the impression of fitness of one for the other in the nature of things. It is thus that words become the nuclei of feeling, and psychological symbols. Logical symbolism nucleates the idea. It makes the word the sign of a meaning it is gen-

erally agreed to contain. What has been a symbol of feeling may become the symbol of an idea. The words of cryptic slang begin as symbols of ideas. To learn their significance may require initiation into the mysteries of a sect or the secrets of a gang or a course of education and training.

In imitative phrases just discussed we have a relatively perfect union of phrase and content. In another class considered in an earlier part of this study was found an emphasis of content. And in a third class the form side was found emphasized. In this last tendency of expression for its own sake we have linguistic play where language approximates mere phonic instrumentation and speech music. Its function is to open untried sources of expression and to unlock the stores of energy of a healthy organism in anticipation of the possibilities of future expression of thought, a preparation of the forms for a future content. Such play with language is not useless nor meaningless but rather to be regarded as finger exercises on the piano which are propadeutic to skillful execution of difficult musical scores. On its passive side it means pleasure in the music of language,—"*Stimmungseinfühlung.*" It is the tuneful side of language and means immediate feeling. In the cases cited as coming under the motivation of a desire to imitate, expression is characteristic rather than musically motivated. In both cases, feeling is direct. It is due to reaction to the words and phrases themselves and not first to reaction to the thing that the word or phrase stands for, and then by association to the word itself.

Summary and Conclusions

In a subject so complex it would be vain to expect general assent to formulated views. Individual experiences with their concurrent emotions form the foundations of language. They are not the same as those reflected experiences that come to us from the printed page. This will account for the antipathies (28), otherwise a mystery (36), which well-known writers bear to certain words of unquestioned usage.

In general it seems to hold true that while the unconventional has an emotional basis it does not inform all the fundamental emotions equally. It is closely related to the feeling of individual well-being and the joy of life. It is not the language of love except as this is mingled with pity. It is predominantly objective. It is not the language of fear. It is very largely the language of anger and its sublimations in scorn, sarcasm, ridicule, irony, etc.

Occasionally its creations are such that conventional lan-

guage soon adopts them, but the chief function of slang does not seem to be potential conventionality. Few slang uses are ever created, it is safe to say, with a view to secure their general adoption. The place of the unconventional is as secure as that of informal dress which is used not with the expectation that it shall some day become formal. The world of nature is the connecting link between individual minds. It is the common ground of communication. All words, however abstract they may now be, have their original basis in objects of nature. In conventional language historical progress is from the concrete to the abstract. Philological science breaks through the incrustations of form to reveal the fossil within. When to the unreflective mind this relation of language to nature is no longer evident, it reverts to uses that keep close to the concrete environment. It is the tendency of conventional usage to conceal the crassness of nature as it is the function of slang to keep revealing it.

Conventional language is the language of confederated groups. Slang rises in limited groups whose contact with the world is necessarily immediate, and intimate. These groups of society which involve different social altitudes, different interests and enjoyments, are the centers from which unconventional forms radiate. It is the language of social intercourse rather than that of written communication and books. Concentration upon common interests in the different groups gives rise to group prejudices and to a synonymy of ideas which those not members of the group cannot understand. But the usage of the group works into the deeper structure of the emotional life. There are good reasons, therefore, why the individuals of the group cling to their own forms and why they do not adopt the usage of the other groups. It is only when the groups meet in a collective capacity that the need arises for a common vocabulary. Communication with all the groups is relatively infrequent and its language is an artificial something that lies on the upper levels of consciousness.

The unconventional does not seem to be the means of economizing effort in speech. It no doubt has this effect in some cases. There is a sort of involution of language in which all forms but those absolutely necessary are spared. There is, on the other hand, a fullness and freedom of form half conscious of itself, which the unconventional tendency affects.

There is a natural slang and an artificial slang. The first is a reflection of the environment. The thinly settled country reflects nature, which is always about the same. Here language changes slowly and here rises the archaic unconven-

tional. In the city the rapid change in the interests and conditions of life also reflects itself in language. Here occur the more radical changes in language. The second, artificial slang, is an arbitrary creation. It may be by a group as in cryptic slang or by an individual writer who as the individual poet imitates the folk epic, imitates the natural forms of folk speech. This slang as found in books is sometimes abstract and learned and suggestive of student life and the lecture room. From books it is in turn carried into conversation and serves, almost invariably, to produce ludicrous effects. Natural slang is the language of the home and the privacy of a few friends in social intercourse. It is to so great a degree the language of intimate friendship that its use by a stranger is resented as an impertinence and by a friend expected as a sign of good-fellowship.

The language that goes with manual and physical activity, that accompanies movement in work or play, makes a deeper impression than the language of the schoolroom which is inculcated in its oral form by actual practice for an average of only a few minutes of the school day of six hours. And this fact is especially significant when it is remembered that the period of greatest activity, at least in play if not in work, corresponds with the period of greatest change in language. The forms of language that take the deepest hold on human nature are those which accompany children in their real emotional experiences and their manifold physical, rather than mental, activities.

The language which expresses the excitement of the market, the games of chance, the pursuit of wealth, which informs the passions of conflict, the instincts of nutrition, and reproduction, is not always the language of propriety, grammatical correctness and logical consistency. It is the language, however, with which the nervous system in moments of tension and relaxation lives and makes a part of itself. The sources of unconventional language lie deep and its power is irresistible as a force of nature. It is the individual speaking from the racial substratum, while conventional language is the language of expediency, of social deference, and reverence of the past.

Unconventional language keeps close to the objective world of things. It keeps oriented to the sense of touch, contact, pressure, preferring a language material which is ultimately verifiable by the most realistic sense. It tends to relate itself to the immediate surroundings and to change with the changing conditions of the time. It is the language of the here and the now. It is limited to the concrete, ridicules the abstract and remote. In some of its forms, it affects a lack of orientation, is far-fetched, extravagant, because it is so

sure of its realities. It has so certain a step that it plays with the objects of its thought. It knows where it wants to go and it has the linguistic means to arrive, but it may go like one uncertain of his course in harlequin fashion. Its affectations, euphemisms, and contradictions seem to rise from a secure perception of reality. It is the language of reality such as common sense conceives it.

The rise of the unconventional is due to the play impulse; to the desire for secrecy, for economy of effort, for accuracy, and for reality.

Variations from standards are ultimately referable to individuals, opportunity for habituation to them is afforded by the group.

Words are objectionable when their composition is irregular, when they are purely imitative and require sounds exceptional in loudness and quality and a mouthing articulation, when associated with an objectionable individual or group source, when they represent objectionable things, when they are sufficiently like those of the preceding class to arouse dispositions due to them, when they occur in a context which produces a conflict of dispositions, or attitudes.

The range of unconventional language is from words of the most objective definiteness to expletive accompaniments of gesture and emotion on the one hand, and to a waning content with exaggeration of form to mere phonic instrumentation on the other.

It is largely the language of expression rather than that of communication. The conventional is for distance; it holds from group to group, from generation to generation, from age to age. It tends toward permanence of form. The unconventional is for depth of appeal; it is individual and intimate. It is also unstable and temporary. But however fitful, irregular, and protean it may be, the impulses that inform it are permanent. As there always has been so there always will be an unconventional language.

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THE AGE OF WALKING AND TALKING IN RELATION TO GENERAL INTELLIGENCE

By Cyrus D. Mead, University of Cincinnati,
Sometime Principal of the Indiana School for Feeble-Minded Youth

It is an accomplishment long to be remembered in the family circle when the child first stands on his feet, and takes the "first step," or when he first babbles an intelligent word in which the idea is associated with the object. May it not well cause concern if the ripening of either of these instincts be long deferred? The writer was impressed, while examining the entrance blanks of children in one of our state institutions for feeble-minded, with the apparent lateness at which these children walked and talked. The question arose as to whether or not "general intelligence" played a rôle in the development of these tendencies. Kirkpatrick (4) says, that, "philologists and others interested in the origin of language and the development of intellect find very striking analogies between the development of speech and intelligence in the race and in the child." It shall be the purpose of this study to offer data obtained on the point in question. In order to establish "norms" for comparison, the results of a subsequent study will be given first, viz., the age of walking and talking as manifested in the "bright, normal child."

The children of the first group, referred to hereafter as "normal" children, are 25 boys and 25 girls, chiefly of Teachers College graduate men, with a few children of undergraduate men, and several of Columbia College graduate men. A few are children of professors. The data were obtained during the springs of 1911 and 1912. Only seven children were over 9 years of age, none was over 15 years of age, the average age being a little less than 6 years. These children represent thirty different families. The question and instructions given to the father, were:

"At what age, nearest month, did your child begin to walk and talk?

"Walking means: to take a step unassisted.

"Talking means: to use a word intelligently, i.e., to associate the idea with the object."

The answers were in almost all cases verified by the mother. It might be remarked that, of the first forty children obtained at random, 22 were boys and 18 were girls. Preference was then given to girls in order to make the distribution equal. Table I shows the age (years) of the child when the data were obtained, and the nearest month at walking and talking.

TABLE I. NORMAL CHILDREN.

Boys	Age	Walked Nearest Mo.	Talked Nearest Mo.	Girls	Age	Walked Nearest Mo.	Talked Nearest Mo.
1	4	14	18	1	4	14	17
2	2.5	13	18	2	3	18	16
3	14	14	17	3	6	13	16
4	8	15	20	4	2.5	15	18
5	12	16	9	5	15	13	18
6	7	11	9	6	9	17	14
7	9	12	18	7	1.5	14	17
8	7	15	21	8	2	12	17
9	9	15	20	9	2	13	15
10	12	13	16	10	7	11	18
11	7	12	12	11	2	12	18
12	5	30	25	12	2	14	18
13	5	12	18	13	3	15	10
14	8	13	10	14	15	13	12
15	7	11	11	15	6.5	13	15
16	1.5	14	14	16	11	12	14
17	10	14	15	17	died	12	16
18	2	14	15	18	3	12	24
19	9	15	17	19	5.5	13	12
20	7	14	16	20	2.5	16	10
21	4	13	19	21	7	11	9
22	2	14	15	22	6	14	12
23	5	16	13	23	4	13	12
24	6	13	18	24	5	12	10
25	2.5	14	10	25	4	15	14

NOTES ON TABLE I. WALKING AND TALKING.

1. Of 50 boys and girls, 17 began to talk before they began to walk, 11 girls and 6 boys.

Three began in the same month; these three were boys.

2. Boys 3 and 4 are brothers. The latter learned to walk on hard wood floors, while the former had matting. Girl 2 had polished floors.

3. Boy 12 began to walk and talk later than usual for normal children. During his early years he was not a very strong baby. At 4.5 years, adenoids and tonsils were removed. His father says for two years previous, the boy had never had a restful night. He is known personally to the writer and is an especially bright lad.

4. Girl 25 was a very heavy child.

TABLE II.

Frequency Table.—Normal Boys. Walking.		Frequency Table.—Normal Boys. Talking.	
Months.	Frequency.	Months.	Frequency.
11	2	9	2
12	3	10	2
13	5	11	1
14	8	12	1
15	4	13	1
16	2	14	1
		15	3
		16	2
		17	2
		18	5
		19	1
		20	2
		21	1
30	1	25	1
11 means 10.5 to 11.5 months.		9 means 8.5 to 9.5 months.	
N=25		N=25	
Median=13.875		Median=16.5	
Guessed Average=14		Guessed Average=16	
True Average=14.28		True Average=15.76	
A. D.= 1.64		A. D.= 3.2	
25 percentile=12.75		25 percentile=12.75	
75 percentile=14.69		75 percentile=18.25	
Q.= .97*		Q.= 2.75*	

*Approximate P. E. obtained by calculating the semi-inter quartile range.

From Table II we see the age that normal boys begin to walk and talk; and from Table III the same for normal girls. Figures I and II show the distribution curves for the same. Judging from the general tendencies of 50 cases, we might say that:

1. Boys begin to walk at 13.875 months (using the median as a measure of central tendency), with a probable error of .97 month; and begin to talk at 16.5 months, with a probable error of 2.75 months.

2. Girls begin to walk at 13.21 months, with a probable error of 1.12 months; and begin to talk at 15.5 months, with a probable error of 2.68 months.

3. Girls walk and talk a little earlier than boys. The same is true if we judge from the average accomplishment of 50 children. Using the A. D. as a measure of variability, boys are more variable than girls.

TABLE III.

Frequency Table.—Normal Girls. Walking.	
Months.	Frequency.
11	2
12	6
13	7
14	4
15	3
16	1
17	1
18	1

11 means 10.5 to 11.5 months.
N=25
Median=13.21
Guessed Average=13
True Average=13.48
A. D.= 1.28
25 percentile=12.21
75 percentile=14.44
Q= 1.12

Frequency Table.—Normal Girls. Talking	
Months.	Frequency.
9	1
10	3
11	0
12	4
13	0
14	3
15	2
16	3
17	3
18	5
24	1

9 means 8.5 to 9.5 months.
N=25
Median=15.5
Guessed Average=15
True Average=14.88
A. D.= 2.76
25 percentile=12.06
75 percentile=17.42
Q= 2.68

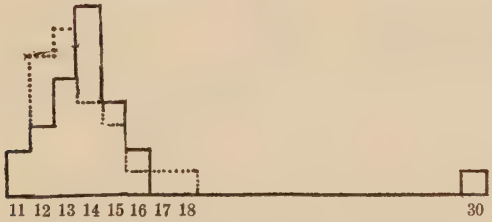

FIG. I. Surface of frequency (months) for Walking.
Normal Boys—— 25
Normal Girls.... 25

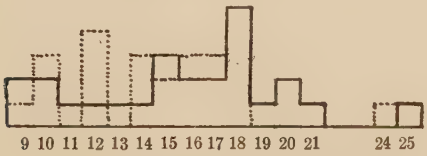

FIG. II. Surface of frequency (months) for Talking.
Normal Boys—— 25
Normal Girls.... 25

TABLE IV.

Frequency Table. Walking. Normal Children—Boys and Girls.		Frequency Table. Talking. Normal Children—Boys and Girls.	
Months.	Frequency.	Months.	Frequency.
11	4	9	3
12	9	10	5
13	12	11	1
14	12	12	5
15	7	13	1
16	3	14	4
17	1	15	5
18	1	16	5
		17	5
30	1	18	10
		19	1
		20	2
		21	1
		22	0
		23	0
		24	1
		25	1
11 means 10.5 to 11.5 months.		9 means 8.5 to 9.5 months.	
N=50		N=50	
Median=13.54 months[1]		Median=15.80 months	
Guessed Average=14		Guessed Average=16	
True Average=13.88		True Average=15.32	
A. D.= 1.56		A. D.= 3	
25 percentile=12.44		25 percentile=12.20	
75 percentile=14.57		75 percentile=17.85	
Q= 1.06		Q= 2.83	

[1] By the formula

$$\text{“P. E.}_{\text{t. av.-obt. av.}} = \frac{\text{P. E.”}_{\text{dis.}}}{\sqrt{n}},$$

the chances are 999 to 1 that the true median will not differ from the median obtained by more than .72 months.

See “ Mental and Social Measurements” (1904) Thorndike, p. 139, on the “ Reliability of an Average” (or median).

[2] The chances are 999 to 1 that the true median will not differ from the median obtained by more than 1.92 months.

Table IV shows the age that 50 normal boys and girls, combined, begin to walk and talk. Figures III and IV show the distribution curves for the same. It may readily be seen that children in general (judged from 50 cases at random) are more constant in beginning to walk than in beginning to talk. One is a much more evident trait than the other. There is more chance in the latter of the observer being uncertain

or biased. Again, there is a more constant performance in physical traits for people in general than for all people in the more intellectual traits. The beginning of speech might be classed as more of an intellectual characteristic than beginning walking. That comparison might be had between the performance of normal children in general, and individual children in particular, the abbreviated diaries of the maturing of the walking and talking instincts in several "bright" children are recorded. That of Preyer (14 and 15) is given first.

FIG. III. Surface of frequency (months) for Walking. 50 Normal Boys and Girls

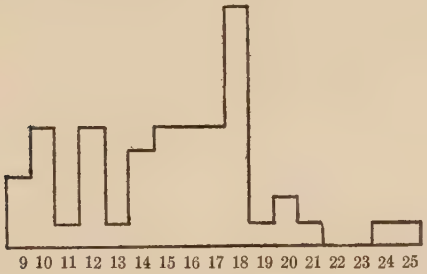

FIG. IV. Surface of frequency (months) for Talking. 50 Normal Boys and Girls

Walking, pp. 267-278:

1. "In the 22nd week the child (boy) actually raised himself to a sitting posture . . . but it was not till the 39th week that he could sit alone for any length of time; then he liked sitting, but not without support. . . . Finally in the 42nd week the child sits up in the bath, without support. . . . From the 11th month, sitting becomes a habit for life."
2. "The first successful attempts to stand, . . . without support, but only for a moment, were made in the 39th week, . . . In the 11th month he can stand without any support, and even stamps with his foot, but for all that he is not at all sure on his feet."

3. 48th week—(11,2 mo.) pushes a chair.
4. 53rd week—creeps, but can not walk alone.
5. 63rd week—"The child still walks only when he can hold on with both hands."
6. 65th week—"Cannot yet walk alone."
7. 66th week—"Suddenly, on the 457th day (15.2 mo.), the child can run alone. The day before he was entirely unable to take three steps alone. . . . Now he can run around a large table." ("And from that day forth he could walk upright." p. 275.)

Talking, pp. 77-165: (see "Conspectus" by Brown at beginning.)

1. Does not repeat monologue syllables after any one at 10th month.
2. "Some syllables emphatically pronounced to child were for first time correctly repeated in 11th month."
3. Ability to discriminate between words in 12th month.
4. "The most important advance consists in the now awakened understanding of spoken words." 13th month.
5. "Here at the beginning of the 14th month, is the idea of a definite stationary object associated with a sound heard, as so strongly that it is able to produce an independent act of locomotion, the first one."
6. Advance in repeating syllables in 15th month.
7. Touches eye, ear, etc., when these are named, not with certainty. Understands "bring," "give," etc., in 16th month.
8. "Astonishing progress in understanding what is said. Few expressions of his own with recognizable meaning." 21st month.
9. "The 23rd month brought at length the first spoken judgment." (Said "heiss" when his milk was too warm.)
10. Combination of two words into a sentence at 24th month, 707th day.
11. 810th day (27th month), gave his own name for the first time in answer to a question.

WHIPPLE, G. M. (25)

Walking:

1. Richard, son of Prof. W., "crept backwards, 6 mo.; creeping forward perfected, 7.5 mo.; first stood by holding with but one hand, 9.5 mo.; walked by holding with hands, 9.7 m.; stood alone, 11 mo.; first step alone at 13.5 months; ten steps alone, 5 days later."

Talking:

1. "Said 'mama' at 7.5 months but this may have been more accident. Imitation began to be very active at 9 mo.; date of pronouncing first word unknown. Meaning of a phrase understood at 9 mo.; four words pronounced at 11.5 mo.; 15 words had been used at 1 year; 6 word sentences were used at 20 mo."
2. Words known and used by R. at 3rd birthday about 1,800.[1]

[1] For a condensed table of the number of words used by individual children from 16 mo. to 4 yrs. of age, see Whipple, p. 17, Ped. Sem., Vol. 16, 1909.
Also see Heilig, p. 1, Ped. Sem., Mch., 1913.
Rowe, p. 187, Ped Sem., June, 1913.

MAJOR, D. R. (10)

Notes on son's learning to stand and walk—pp. 347-350:

1. "Stood in a leaning, tottering position," holding to chair, in 46th week (316th day).
2. "Stood unsupported two or three seconds during 60th week."
3. "Walked ten feet, holding to crib, on 385th day." (12.8+ month.)
4. "Two or three steps without support, 434th day." (14.5— month.)
5. "Walked about 3 feet, without support, 445th day." (14.8+ month.)

Talking: p. 318.

1. "A great advance in the 15th month was in the appearance, for the first time, of the independent use of words or sounds to designate things the child saw or heard. The sight of the object or the sound which the child recognized called forth the name or word which had been associated with it."

HALL, MRS. W. S. (2)

Notes on son—Walking, pp. 403-404:

1. Crept forward at 405th day—(57th week—13.5 month).
2. Stood with support of finger at 38th week.
3. Stood at chair for five minutes at 48th week.
4. "While standing by a chair (364th day—52nd week—12.13 month) accidentally pushed it forward and followed it to keep his support."
5. "On same day he stood alone for half a minute."
6. "In the 60th week (415th day—13.8 months) he could walk quite steadily when supported by one hand."
7. "Took first unaided step," 428th day (14.2+month).
8. "Took ten independent steps," 435th day.

Talking, pp. 467-591:

1. "Recognized and imitated sounds from street"—44th week.
2. The word "bye-bye" used unexpectedly at 260th day. (33rd week; 8.6+month.)
3. "Said 'papa' as father entered room." 291st day. (9.7 month.)
4. "Bath, box, shoe (326), gone (331), and paper (333) were first imitated and in a few days used independently. The next word, doll, was first used spontaneously as a doll was put into his hands." (335th day—11.2 month.)
5. "First sentence, 'Papa gone,' 338th day."

SHINN, M. W. (19)

Notes on niece: (Miss Shinn says: "She was born two weeks late—a point that may have some bearing on the rapidity of early development." p. 5.

Walking, pp. 344-360:

1. "On the 267th day (8.9 month), the last of the 38th week, some one looked up from dinner to see the baby standing by a lounge, merely steadied by one hand pressing it, while she waved the other with joy and pride."
2. "On the 279th day (9.3 month), for the first time, . . . she repeatedly stood quite alone for several seconds."

3. "On the 285th day (9.5 months), she deliberately experimented in standing alone as long as she could."
4. "On the 292nd day (9.7 months), kept her balance for about a quarter of a minute."
5. "She appears to have continued to edge along a few steps now and then when holding by a chair, and after the 309th day (10.3 months), would step the length of a lounge, holding on with one hand."
6. "On the 353rd day (11.8 months), I was told that she had walked three or four steps, and this time spontaneously."
7. "On the first day of the 54th week (372nd day; 12.4 months) I saw her walk about three feet alone."
8. "On the 376th day (12.5 months) I was told that she walked alone across a room, some twelve feet, quite spontaneously."

"Good Observations (concerning the acquirement of speech) were first supplied in Germany by Berthold Sigismund in his pamphlet 'Kind und Welt,' 1856; but his observations were scanty. . . . The observations of Sigismund are remarkable for their objectivity, their clearness of exposition, and their accuracy." (PREYER—"The Development of the Intellect"—Appendix A, p. 221-23.) A few of his observations are given.

"The first imitation of sounds, proved to be such, were made after the age of eleven months."

"At the age of nine months he distinguished accurately the words 'father, mother,'" etc.

"The first word imitated by the child of his own accord (after fourteen months) was the cry of 'neuback' (freshbake), as it resounded from the street; it was given back by the child, unsolicited, as ei-a."

For comparison, the individual observations on these five children are given in table form. A much wider range, and

	Median Age (Months) Beginning to Walk[1]	Median Age (Months) Beginning to Talk[2]
50 Normal Boys and Girls.	13.50	15.70
	P. E. 1.06	P. E. 2.83
Baby Shinn.....	11.8	....
Baby Whipple.....	13.5	11.5 (4 words)
Baby Hall.....	14.2	(11.2)
Baby Major.....	14.5	14. +
Baby Preyer.....	15.2	22. +

[1] "Beginning to walk," meaning "to take a step unassisted."

[2] "Beginning to talk," meaning "to use a word intelligently, associating idea with object."

of course uncertainty, is noted in the beginning of words. In the data collected on the 50 normal children, judging from such expressions as " bye-bye " and " pa-pa " was discouraged.

The children of the second group, referred to hereafter as " feeble-minded " children, represent the results of an examination in 1910 of something less than 400 personal descriptive entrance blanks of " schoolable " cases (lower grades were eliminated) in the Indiana School for Feeble-Minded Youth, an institution of something over 1,200 enrollment. Many of the entrance records did not give the age at which the child began to walk and talk, but from those complete, the age was obtained for:

	Walking	Talking
Boys	84	56
Girls	60	36
Total	144	92

The tendency of the parent, physician or guardian filling the blank was to answer the questions:

"At what age did the child commence to walk?"

"At what age did the child commence to talk?"

in half and whole years, as " 1½-2-2½ " etc., or, " between 2 and 2½," etc. Only a few records gave the month, hence the age was taken from the records at the nearest quarter year. For example: if the month was given as " 17," entry was made " 1½ " years; if the month was given as " 19," entry was made " 1½ " years. The quarter years are thrown, half and half each way, in the frequency tables, and in plotting. In case of an odd number of frequencies on the quarter year, the " larger half " was thrown to the lower, or earlier, group, hence the figures tend to be more conservative. Such answers as, " at the common age," " at the normal age," " very slow," were not used. Cripples of course were not counted.

That the peculiarities of speech in feeble-minded children in general might be seen, the first 100 boys and girls, all grades, " schoolable " and " non-schoolable," as taken from the institution entry book, Jan. 1, 1908 to Sept. 20, 1908, are here tabulated. In answer to the questions on the application blanks: " Is the speech perfect? " " What peculiarities

of speech are there?" "Is he dumb?" the following was noted:

	Number	Defective in Speech, but not Dumb	Per cent	Dumb	Per cent
Boys.....	61	22	36	7	11.5
Girls.....	39	15	38.5	7	18

Table V shows the age, nearest quarter year, at which feeble-minded children commenced to walk and talk.

TABLE V. FEEBLE-MINDED CHILDREN.

Boys	WALKED Nearest ¼-Year	TALKED Nearest ¼-Year	Girls	WALKED Nearest ¼-Year	TALKED Nearest ¼-Year
1	2	Dumb	1	...	4
2	3.5	....	2	4	4
3	4	5	3	1.5	1.5
4	1.25	3	4	...	2
5	3.5	3	5	3	...
6	3	Dumb	6	3.5	...
7	4	2	7	6	Dumb
8	1.25	5	8	1	...
9	3	4	9	1.5	3
10	2	1.5	10	2.5	2
11	2	3	11	4	3
12	4	....	12	5	7
13	4	2	13	1.5	2
14	3	3	14	2	4
15	1	1.5	15	...	13
16	1.5	1.5	16	1.5	...
17	4	6	17	2	...
18	2.5	2.5	18	2	2.5
19	1	2	19	.75	...
20	2	4	20	2	...
21	1.25	4	21	1	...
22	1.25	2	22	2	2
23	3	Dumb	23	1	1
24	2	3	24	1.5	...
25	1.5	4	25	1	1
26	3	....	26	4	...
27	....	1	27	2.75	...
28	2.5	....	28	2	...
29	2	3.5	29	1.5	...
30	1.5	1.5	30	1.5	...

TABLE V.—Continued.

Boys	WALKED Nearest ¼-Year	TALKED Nearest ¼-Year	Girls	WALKED Nearest ¼-Year	TALKED Nearest ¼-Year
31	1	1.25	31	1	1
32	2	....	32	1	...
33	1.5	....	33	2	...
34	3	....	34	1	...
35	1.5	3	35	4	...
36	2.25	....	36	...	1.5
37	2.25	3.5	37	3	3
38	1.5	5	38	...	5
39	1.5	....	39	1	...
40	1.5	2	40	1	2
41	2	....	41	1	3
42	2.5	....	42	2	4
43	1	....	43	2	...
44	1.25	....	44	1.25	...
45	2	....	45	1.5	1.5
46	1.5	3	46	1.5	...
47	1	2	47	1.25	3
48	1.5	2	48	...	2
49	3	4	49	2.5	2
50	1.5	3	50	4	6
51	1.5	1	51	1	3
52	3.5	....	52	1	7
53	1.25	....	53	2	...
54	4	3	54	2.5	2
55	1.25	2	55	2.5	...
56	2	....	56	1	1
57	1.25	....	57	1.5	2
58	....	5	58	1.25	...
59	1.5	....	59	4	...
60	2	4	60	1	3
61	1.75	3	61	1.5	2
62	1.5	2	62	2	...
63	4	4	63	2	Dumb
64	1.5	2	64	1.5	2
65	1.5	1.25	65	1.75	4
66	5	8	66	2	...
67	2.5	7			
68	1.5	....			
69	1	....			
70	2	....			
71	2	....			
72	2	4.5			
73	....	2			
74	1.25	9			
75	1.25	3			

TABLE V.—Continued

Boys	WALKED Nearest ¼-Year	TALKED Nearest ¼-Year	Girls	WALKED Nearest ¼-Year	TALKED Nearest ¼-Year
76	1	1			
77	1.5	....			
78	2.5	4.5			
79	2	9			
80	2.25	....			
81	4	....			
82	3	....			
83	1.25	....			
84	6	6			
85	2.5	3			
86	1.25	1.25			
87	1.25	1.5			

TABLE VI.

Frequency Table. Feeble-Minded Boys Walking		Frequency Table. Feeble-Minded Boys Talking	
Years	Frequency	Years	Frequcncy
1	14	1	5
1.5	25	1.5	6
2	17	2	11
2.5	7	2.5	1
3	8	3	12
3.5	3	3.5	2
4	8	4	7
4.5	0	4.5	2
5	1	5	4
5.5	0	5.5	0
6	1	6	2
		6.5	0
		7	1
		7.5	0
		8	1
		8.5	0
		9	2
1 means .75 to 1.25 years.		1 means .75 to 1.25 years.	
N=84		N=56	
Median= 1.85		Median= 2.98	
Guessed Average= 2		Guessed Average= 3	
True Average= 2.15		True Average= 3.28	
A. D.= .78		A. D.= 1.37	
25 percentile= 1.39		25 percentile= 1.89	
75 percentile= 2.75		75 percentile= 4.14	
Q= .68		Q= 1.125	

TABLE VII.

Frequency Table Feeble-Minded Girls Walking		Frequency Table Feeble-Minded Girls Talking	
Years	Frequency	Years	Frequency
1	17	1	4
1.5	14	1.5	3
2	13	2	11
2.5	5	2.5	1
3	2	3	7
3.5	1	3.5	0.....
4	6	4	5
4.5	0	4.5	0
5	1	5	1
5.5	0	5.5	0
6	1	6	1
		6.5	0
		7	2
		13	1
1 means .75 to 1.25 years.		1 means .75 to 1.25 years.	
N=60		N=36	
Median= 1.73		Median= 2.50	
Guessed Average= 2		Guessed Average= 2.5	
True Average= 2.02		True Average= 3.11	
A. D.= .82		A. D.= 1.42	
25 percentile= 1.19		25 percentile= 1.84	
75 percentile= 2.35		75 percentile= 3.85	
Q= .58		Q= 1.00	

From Table VI we see the age that feeble-minded boys begin to walk and talk; and from Table VII the same for feeble-minded girls. Figures V and VI show the distribution curves for the same. Judging from the general tendencies of 144 feeble-minded boys and girls in beginning to walk, and 92 feeble-minded boys and girls in beginning to talk, we might say, that:

1. Feeble-minded boys begin to walk at 22.2 months (1.85 yrs.) (median) with a probable error of 8.16 months; and begin to talk at 35.76 months, with a probable error of 13.5 months.

2. Feeble-minded girls begin to walk at 20.76 months, with a probable error of 6.96 months; and begin to talk at 30 months, with a probable error of 12 months.

3. Feeble-minded girls walk and talk a little earlier than feeble-minded boys. This is true of normal girls and boys. The same is true in both groups if we judge from the average accomplishment. Using the A. D. as a measure of variability,

girls are a little more variable than boys. The P.E. would show the reverse.

Table VIII shows the age that feeble-minded boys and girls, combined, begin to walk and talk. Figures VII, VIII and IX show the distribution curves for the same. Comparing Tables IV and VIII, we see that, from the data at hand:

Normal children:

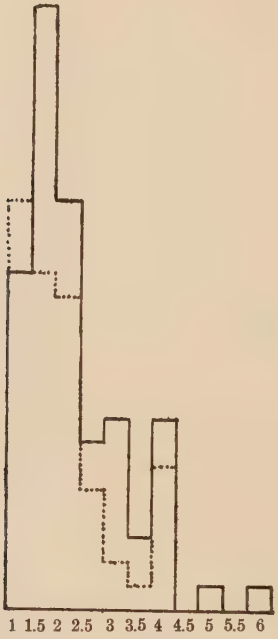

FIG. V. Surface of frequency (half years) Walking.
Feeble-Minded Boys___ 84
Feeble-Minded Girls.... 60

1. Begin to walk at 13.54 mo. (P.E. 1.06); begin to talk at 15.8 mo. (P.E. 2.83).

Feeble-Minded Children:

1. Begin to walk at 21.6 mo. (P.E. 7.56); begin to talk at 34.4 mo. (P.E. 12.8).

In other words, the median mentally defective child (school-able) walks 8 months, and talks 18.6 months later than the median normal child walks and talks.

Many of the investigations into children's walking and talking have been physiological in nature; they have dealt with the manner of acquiring locomotion or speech, and children's

vocabularies at two, three, four years of age, etc. The writer knows of no other study in which the time of the ripening of the walking and talking instincts in groups of children has been made the basis of a statistical research. Some years ago Dr. Ireland (3) in England calculated the average time that "idiots" began walking and talking. The term "idiot" has, in time past, in Europe, been used to represent a low form of mental deficiency. The term is still used broadly to include even high grade defectives, while in this country

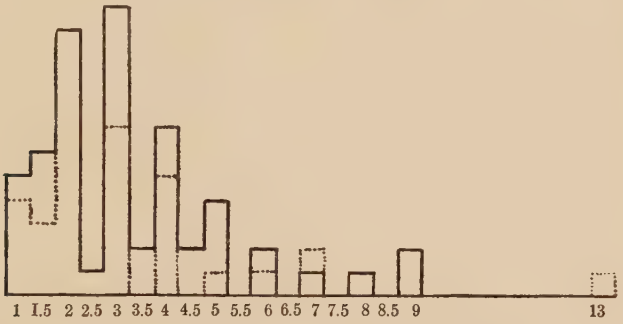

FIG. VI. Surface of frequency (half years) Talking.
Feeble-Minded Boys___ 56
Feeble-Minded Girls.... 36

milder and softer terms are applied, that of "moron," "mentally defective," or "imbecile" children. The "idiots" in the institutions of England were generally of the lower types of feeble-mindedness, none of which type would be included in the group of "schoolable" feeble-minded children who constitute the second group of this study. That the conservative nature of this research might be seen, and that, in a broad way, three groups of children, representing differing degrees of mentality, might be contrasted, we note the observations of Ireland (p. 323).

"He (the healthy child) generally begins to walk from the 12th to the 18th month. The first appearance of speech is variable: words generally come from the first to the second year, but if the child is mute after two years we may suspect there is something deficient. Such is the ordinary course in healthy infancy; but with idiots this evolution of the senses and motor powers is much slower, and often irregular. . . . In general, imbecile children are awkward in their motions and slow at beginning to walk."[1]

"Merely backward children are widely distinct from idiots. They are of slow growth, physical and mental; they are late in walking and in speaking but show no sign of brain disease."

TABLE VIII.

Frequency Table Walking Feeble-Minded Boys and Girls		Frequency Table Talking Feeble-Minded Boys and Girls	
Years	Frequency	Years	Frequency
1	31	1	9
1.5	39	1.5	9
2	30	2	22
2.5	12	2.5	2
3	10	3	19
3.5	4	3.5	2
4	14	4	12
4.5	0	4.5	2
5	2	5	5
5.5	0	5.5	0
6	2	6	3
		6.5	0
		7	3
		7.5	0
		8	1
		8.5	0
		9	2
		13	1
1 means .75 to 1.25 years.		1 means .75 to 1.25 years.	
N=144		N=92	
Median= 1.8 (21.6 mos.[2])		Median= 2.87 (34.44 mos.[3])	
Guessed Average= 2		Guessed Average= 3	
True Average= 2.09		True Average= 3.21	
A. D.= .8		A. D.= 1.4	
25 percentile= 1.31		25 percentile= 1.86	
75 percentile= 2.58		75 percentile= 4.00	
Q= .63 (7.56 mos.)		Q= 1.07 (12.84 mos.)	

[1] Ireland, Mental Affections of Children. p. 395.

[2] By the formula

$$\text{"P. E.} = \frac{\text{P. E. dis.,"}}{\text{t. av.-obt. av.} \sqrt{n}}$$

the chances are 999 to 1 that the true median will not differ from the median obtained by more than 3 months.

[3] The chances are 999 to 1 that the true median will not differ from the median obtained by more than 6.43 months.

The average age at walking of 111 cases of "imbecile" children investigated by Dr. Ireland was 2.5 years. Only five began to walk at one year. He attributes lateness in walking to the deficiency in the power of mental guidance, although in some cases physical weakness may be a cause. He says:

"If imbecile children are slow at learning to walk, they are still slower at learning to speak. The lower classes of idiots never learn to speak at all. Of 103 cases of which I have notes, 36 were found mute on entry, and 67 could speak more or less. The average time at

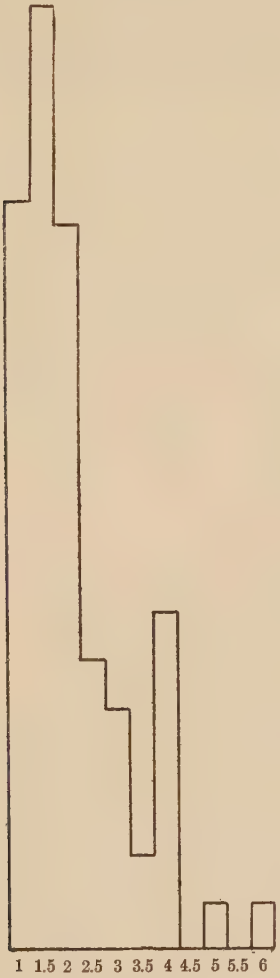

FIG. VII. Surface of frequency (half years) Walking.
144 Feeble-Minded Boys and Girls.

which they began to speak was four years and three months. (4¼ years.) Only four were noted as having begun to speak at one year. Sometimes they began to speak as late as ten or twelve. . . . they had no ideas to express."

Tredgold (*22*) has made similar observations. He says (p. 90):

"A similar retardation of physiological activity is seen with regard to dentition, speech, and walking. Inquiries show that a large proportion of aments do not cut their first or second teeth until some considerable time after the ordinary period. Many of them do not attempt to stand until their third year, and walking is correspondingly late. In many cases the child is four or five years old before it says a word."

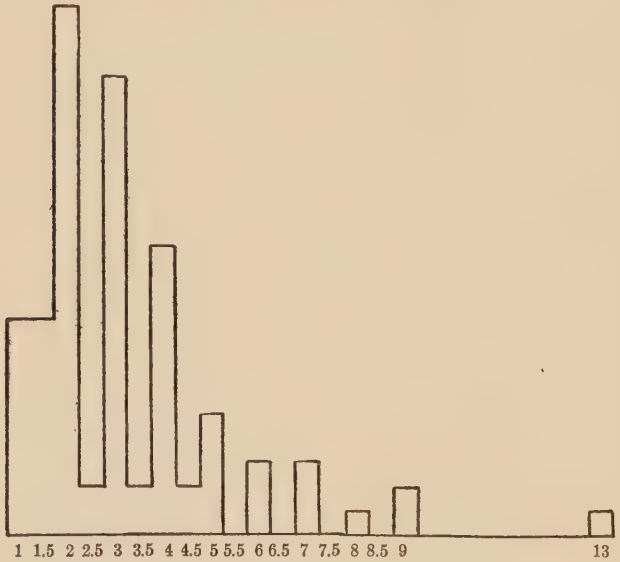

FIG. VIII. Surface of frequency (half years) Talking. 92 Feeble-Minded Boys and Girls.

In table form, the above findings and observations would be: letting I, represent normal children; II, "schoolable" feeble-minded children; III, "idiots":

	Number of Children	Age at Walking (Months)	Age at Talking (Months)
I.	50	13.54	15.8
II.	144—walking 92—talking	21.6	34.4
III.	111—walking 67—talking	30.0	51.0

Of the many articles in print on the development of speech in the child, the following from Preyer (13) p. 106 is perhaps as good a summary as may anywhere be found:

"The first thing with which the learning of speech begins is not, as was formerly assumed, the first cry of the newly born, for this can have no other significance than that of a reflex, like sneezing for instance. In fact, it often occurs

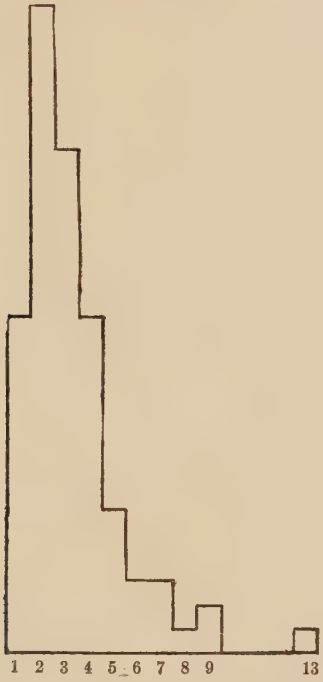

FIG. IX. Figure VIII "Smoothed"—Half years thrown, half and half, to the year.
92 Feeble-Minded Boys and Girls—Talking.

that children announce their entrance into the world by a sneeze instead of a cry. But when strong impressions of various kinds have alternated with one another—when feelings such as hunger, pain, cold, on the one hand, and satiety, pleasure, warmth, on the other, have been discriminated, then crying acquires a speech significance, and the mood of the child may be perceived through the variations in his voice. . . . But all loud utterances of this sort that express bodily, and very soon also, mental states, are the farthest

possible from being portions of an articulate language; rather are they completely analogous to the language of animals. Nor have those syllables the least claim to significance as language which are heard sometimes as early as the seventh or eighth week, . . . as ba, ma, am, ab, gö (etc.). These are produced, just as are the later sounds, . . . in the babbling monologues of the infant, by the movements of the vocal muscles, often through pure accident; and they have at the beginning no more psychogenetic significance than snoring, ...

"These utterances even in the third quarter of the first year are still almost wholly devoid of significance as language; but in the fourth quarter the character of them very often changes, and we may perceive that sounds uttered are influenced by the sounds heard from other persons, by words. With this is reached the critical point in the learning of language. That point is passed on the day when the child for the first time uses a word of verbal language independently and correctly."

That sensory impressions are prerequisite to audible expression there seems to be no question. That "ideas," translated into intelligent forms of expression, form the basis of speech in man there can be no dispute. That such ideas come slowly to the mentally deficient child we must admit. That speech is slow in such children, as a group, must be evident from the above findings. The individual exception may appear, but the fact seems apparent that, while in the individual, physical weakness or adenoid growth, or other malformation,[1] may be contributory causes to lateness in walking or talking, the general tendency of the deferred ripening of the walking and talking instincts, as shown in large groups of children, may well be a matter of grave concern. By the slow, and more seriously, the impaired, maturing of these instincts, stimuli of greatest educational value in the earlier months are withheld from the child. If general psychic activity be sluggish, proper functioning does not occur, and conscious associations are not so readily formed as in the healthy normal child. If the child has a motor or sensory defect, his inability

[1] On the importance and effects of structural irregularities in the peripheral organs of speeech, with clinical cases given, see references 6, 7, 8, 9. The substance is, that mental retardation may be the result, as well as the cause, of defective or late speech. "Backwardness in children is not always due to a central lesion, but may be the result of arrested cerebral development due to some abnormality of structure in peripheral organs." (7) "Retarded development of speech always results in defective mentality." (8)

to "break up" sensations leaves him the longer in mental darkness.

That the ability of the child to form ideas is the vital thing in learning to talk, we would see from Preyer (13) p. 89—"ideas are the necessary previous condition for the understanding of the first words learned, and therefore for learning to talk. If these ideas are wanting, the development of languages is not attained." This qualification however follows, p. 94—"no special activity of intellect is proved by the quick learning of speech. . . . On the contrary, excessive speaking argues less intelligence, because, of course, less time remains for thinking." Tracy (21) p. 131, would offer a similar observation. He says: "The wide differences among children make it unsafe to venture any generalizations; except one, viz., this second half year seems to be par excellence the period of the rise of imitation. Some children however, are as far advanced at the beginning of this period as others are at its end. Perhaps it ought also to be remarked that the child who shows a great precocity in imitation, or in learning to speak, will not necessarily on that account turn out a more intelligent child. Imitation does not require a very high degree of mental acuteness, and the child who has been slow in this may in the end surpass his more precocious companion."

While too much importance should not be attached to individual cases, and while normal children in themselves vary greatly in the time of learning to speak, the accomplishment of groups of children of differing degrees of intelligence is not a matter that can be lightly set aside. Man at present is more intelligent than primal man. He learns to utter the first intelligent word sooner than did his ancestors. Phylogeny was slow in speaking. Romanes in his "Mental Evolution in Man" (16) ch. 16, says: "Lastly, if we take the growing child as an index of psychogenesis in the race, there can be no doubt that it points to a comparatively late origin of the faculty of articulation. . . . For even a precocious child does not begin to make any considerable use of words as signs until it is well on into its second year, while usually this stage is not reached until the third." Four years in fact, we might infer from Romanes, is an age corresponding better to the phylogenetic acquisition of language. Does the feeble-minded child then more truly represent phylogeny, in the faculty of speech, than the healthy, normal child?

As a final summary of the "Age of Walking and Talking in Relation to General Intelligence," the following is submitted as the findings of this study:

I

Data

Fifty "normal" children (25 boys and 25 girls), averaging less than six years of age, of graduate students of Teachers College and Columbia College. Ages were thrown to the nearest month.

Walking means: "To take a step unassisted."

Talking means: "To use a word intelligently, i.e., to associate the idea with the object."

Results

The median "normal" child begins to walk at 13.54 months, with a probable error of 1.06 months. The chances are 999 to 1 that the true median will not differ from the median obtained by more than .72 months,—stated in another way, the chances are 999 out of 1,000 that the true median lies between 12.82 and 14.26 months; and 10 to 1 that it lies between 13.16 and 13.92 months. The extreme range is from 11 to 30 months. Ninety per cent of the cases fall between 11 and 17 months.

The median "normal" child begins to talk at 15.8 months, with a probable error of 2.83 months. The chances are 999 to 1 that the true median will not differ from the median obtained by more than 1.92 months,—stated in another way, the chances are 999 out of 1,000 that the true median lies between 13.88 and 17.72 months; and 10 to 1 that it lies between 14.8 and 16.8 months. The extreme range is from 9 to 25 months. Ninety per cent of the cases fall between 10 and 21 months, with 18 months as the mode.

II

Data

One hundred and forty-four "schoolable" children (boys and girls) of the Indiana School for Feeble-Minded Youth, in reply to the question on the personal descriptive entrance blanks: "At what age did the child commence to walk?" and 92 children in reply to the question: "At what age did the child commence to talk?"

Results

The median feeble-minded child begins to walk at 21.6 months, with a probable error of 7.56 months. The chances are 999 to 1 that the true median will not differ from the median obtained by more than 3 months,—stated in another way, the chances are 999 out of 1,000 that the true median

lies between 18.6 and 24.6 months; and 10 to 1 that it lies between 20.03 and 23.18 months. The extreme range is from 12 to 72 months. Ninety per cent of the cases fall between 13 and 50 months.

The median feeble-minded child begins to talk at 34.44 months, with a probable error of 12.84 months. The chances are 999 to 1 that the true median will not differ from the median obtained by more than 6.43 months,—stated in another way, the chances are 999 out of 1,000 that the true median lies between 28.01 and 40.87 months; and 10 to 1 that it lies between 31.09 and 37.79 months. The extreme range is from 12 to 156 months (only one case going above 108 months). Ninety per cent of the cases fall between 14 and 84 months.

Children, in general, learn to walk before they learn to talk.

Boys, whether normal or feeble-minded, learn to walk and talk later than girls.

In decided cases of imbecility, children walk and talk later than in the less pronounced grade of mental defect.

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THREE HUNDRED FIFTY WHITE AND COLORED CHILDREN MEASURED BY THE BINET-SIMON MEASURING SCALE OF INTELLIGENCE: A COMPARATIVE STUDY

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As early as 1895, the French psychologist, Alfred Binet, had devised a series of tests to measure "personality." In 1904 the French government provided for the establishment of special classes for mentally defective children. To meet the practical demand thus created, the determination of which children were subnormal, Binet and his collaborator, Simon, published a series of thirty tests in 1905. These tests were tried on 203 school children of Paris. In 1908 they were revised and arranged on a graded scale. As a result of further experimentation, a second revision of the scale was issued in 1911.

The correlation between age and mental development is the principle upon which the Binet-Simon measuring scale of intelligence is based. The scale consists of a number of tasks and questions, arranged in a graded series of groups, each group corresponding to a given age. The purpose of the tests is to provide a standard of measurement, by means of which a child's intellectual development may be compared with that of the average normal child of his age. The tests are selected to measure native intelligence, influenced as little as possible by environment and training.

Psychologists in Europe and America are experimenting with both the 1908 and the 1911 series, rearranging the serial order, rejecting some tests, and supplementing the series with other tests. When it is perfected, such a series will be of inestimable value. In spite of its present imperfections, the scale is already being put to practical use. Where legal enactments require the segregation and special training of backward and defective children, as in the State of New Jersey (5), some standard is necessary to determine which children are sub-normal. The city of Philadelphia (4) has adopted the

Binet tests for this purpose. The tests are regularly applied in the New Jersey institution for the feeble-minded and defectives at Vineland, and in the Illinois institution at Lincoln.

Although the primary object in devising the tests was the determination of defective children, the need for such a standard is felt in dealing with normal children. To be able to tell with certainty which children in a school are backward, or normal, or endowed with more than average mental ability, cannot fail to result in increased efficiency in teaching.

Psychologists differ in their opinions as to the reliability of the Binet tests. This study, based on the application of the tests to two hundred twenty-five white children and one hundred twenty-five colored children, is offered as a slight contribution to the widespread experimentation now being made. Great help has been received from the articles on the subject by Goddard (30), Terman (57 and 58), Squire (53), Pyle (48 and 49), Ayres (7), Bell (9), Wallin (61), and others, particularly Town's translation of Binet and Simon (13). The purposes of this paper are:

1. To present the results obtained from testing the white children, and to compare the results with those of Dr. Goddard (30).

2. To make a comparative study of white and colored children as measured by the tests.

3. To arrive at some conclusions as to the reliability of the scale as a whole, and as to the serial arrangement of the tests.

4. To make some suggestions based on these conclusions.

Sources of Data and Conditions of the Study

This study was made under the supervision of Dr. Josiah Morse of the University of South Carolina. The writer acknowledges, with gratitude and appreciation, her indebtedness to Dr. Morse for his constant direction, his helpful and stimulating suggestions, and his unfailing kindness. The children were tested in the public schools of the city of Columbia, S. C. The securing of the data was made possible by the permission of the superintendent of the city public school system, and greatly facilitated by the co-operation of the principals and teachers. Four white schools, two of them in the heart of the city, one on the outskirts, and one in a cotton mill village, and one colored school were visited.

The effort was made to conform closely to the methods of Dr. Goddard (30), in order that the results might be compared with his. His 1911 Revision of the scale was used:

his method of procedure was followed in reckoning ages, in administering the tests, in calculating and tabulating results.

The work at one school was finished before another school was visited. The tests were always begun with the children of the lowest grade. The securing of a representative group of children was accomplished in two ways. First, among the white children, at least, the children taken from the two city schools represented a very different social environment from those of the other two schools. Secondly, the teachers were asked to select children of varying ability from the pedagogical standpoint. The teachers gave the examiner their estimates of the children, ranging from unsatisfactory to excellent, after the testing was over. The examiner, a stranger in the city, was thus enabled to conduct the test with no preconceived idea of the child's ability.

The children were interviewed privately, one at a time, in the principal's office or vacant hall. There was no difficulty in securing cordial relations with the children. They were always encouraged, and apparently always exerted themselves to do their best. They invariably responded with interest, if not with eagerness.

The physical age was reckoned by even years, that is, from birthday to birthday. The mental level was fixed at the age at which the child passed all, or all but one, of the tests for that year. He was then advanced a year for each five higher tests successfully passed, *e. g.*, a child who has his intellectual level fixed at seven years, but passes three of the eight year tests and two of the nine year tests, is advanced a year and credited with the mental age of eight. It is believed that the testing was thorough. If a child failed with the tests for his age, he was given the tests for lower ages until his mental level was established. In like manner each child was given the opportunity to pass all of the higher tests that he could.

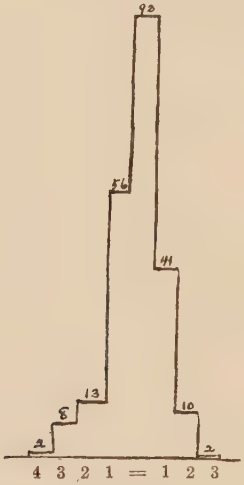
Dr. Goddard's directions were followed strictly. In a few instances the language of the question had to be adapted to the understanding of the child. It was found that the mill children were accustomed to the word "evening" not "afternoon" (VI, 1). The more familiar words "doctor" and "preacher" were substituted for "physician" and "clergyman" (XII, 5). In making change (IX, 1) the children saw the absurdity of giving two dimes in making a four cent purchase. After a few trials, therefore, a quarter was used instead. Some of the comprehension questions (X, 4) had to be explained. All of these slight changes were made with the approval of Dr. Morse. Dr. Goddard himself suggested that the five and ten dollar coins or bills (X, 1) be omitted.

Dr. Goddard's record blanks were used; the responses were marked + or —. It was not possible to have a second person keep a full record of all that the child did and said. The examiner kept in a separate note-book as many as possible of the answers to the definition, comparison, comprehension and problem questions.

Two Hundred Twenty-five White Children Tested

The children ranged in age from six to twelve years old. They were taken from the first seven grades of the school. The distribution curve shows the results. Those testing "at age" passed the tests for their respective ages, or a sufficient number of higher tests, if they failed on some of those for their ages.

Graph I.[1]



Number testing 4 years below age— 2.
" " 3 years below age— 8.
" " 2 years below age—13.
" " 1 year below age —56.
" " at age.....—93.
" " 1 year above age —41.
" " 2 years above age—10.
" " 3 years above age— 2.

[1] In this and following graphs, numerals, at the various levels of the curves indicate numbers of pupils in the groups. Numerals beneath the base lines indicate as follows for each of the individual figures in the graphs: Equality sign signifies "at age;" numerals to the left of the equality sign signify the number of years below, those to the right of it the years above "age," at which the several groups stood according to the test.

Of the entire group of children, ninety-three or 41.3% test at age: (cf. Goddard for the same ages, 39.4%). Children who test either one year above or one year below age are counted with the central group as practically normal and satisfactory. With the method of reckoning physical age employed, any other proceeding would be manifestly unjust. In the summary of results given below, Dr. Goddard's figures are not his totals, but are computed from his group of children whose ages correspond to those of the Columbia children.

	Strong	Goddard
Number testing more than 1 year below age.....	23=10.2%	(15.5%)
Number practically normal and satisfactory....	190=84.4%	(80.7%)
Number testing more than 1 year above age....	12= 5.3%	(3.8%)

It is seen from this that by far the larger number tested are counted satisfactory, that about 5% are better endowed than the average child, and that about 10% are backward. Binet (13) says that no child should be considered mentally defective unless his mental retardation amounts to more than two years. According to this standard, 4.4% of the Columbia children tested are to be classed as defectives. It is also seen that the results do not vary greatly from Dr. Goddard's.

TABLE I.

Age	V.	VI.	VII.	VIII.	IX.	X.	XII.	XII.	Totals	Strong at Age	Goddard at Age
6 yrs.	7	**11**	15	3					36	31%	30%
7 "	1	4	**22**	9					36	61%	58%
8 "		1	4	**15**	4	1	2		27	56%	41%
9 "			2	8	**13**	4	4		31	42%	28%
10 "			2	4	10	**8**	3	2	29	27%	56%
11 "				2	3	4	**11**	6	26	42%	36%
12 "				2	4	2	19	**13**	40	32%	27%
Totals.	8	16	45	43	34	19	39	21	225	41%	39%

This table shows the distribution of the entire number of children in mental and physical age. (The Roman numerals stand for mental age, as determined by these tests. The Arabic numerals, when used to designate age, stand for physical or chronological age.) The heavy-faced figures show

those testing "at age." For example, of the seven-year-old children, 22 tested at age, 4 tested VI, 1 tested V, and 9 tested VIII. To the right are given the percentages of children testing at age for each year, side by side with the corresponding figures of Dr. Goddard.

If the tests are so selected and graded as to constitute an exact standard of measurement, the largest group of normal children of each year should test at age. This is seen to be the case with the seven, eight, nine, and eleven-year-old groups. The largest group of six-year-old children test one year above age; the largest groups of ten and twelve-year-old children test one year below age. Dr. Goddard's table shows the same thing with the six and twelve-year-old groups. This would seem to indicate that the questions for seven years are too easy, and those for twelve years, perhaps for ten years, are too difficult.

An examination of the two columns to the right shows that the total number testing at age varies little from Dr. Goddard's; 41% and 39%; but that the proportion varies greatly from year to year. To quote from him (30, page 235): "To a person familiar with statistical methods the foregoing curve of itself, amounts to practically a mathematical demonstration of the accuracy of the tests. The results could not arrange themselves on this curve, which is recognized as practically a normal curve of distribution, if the questions were not carefully graded. Secondly, if they were not right, age for age, but were too hard or too easy, the largest group would not be one *at age,* but would be a year below or a year above according to whether they were too hard or too easy. Consequently, we are forced to the conclusion that the questions that Professors Binet and Simon have selected are well graded, at least from the ages of five to twelve, and that they fit the ages to which they are assigned."

With this conclusion we cannot agree. The tables of his paper, as well as of this, show that the largest group always fall under one of the three central divisions. The children of these three divisions are counted practically normal. The number of children tested is small, but it is believed to be a representative group. Therefore, we feel justified in drawing the following conclusions:

1. The tests are carefully graded, but they constitute an *approximate* and not an *exact* standard of measurement.

2. The scale is too easy for the seventh year, and too difficult for the tenth and twelfth years.

A tabulation of all the answers to each of the questions is the only correct basis by which to determine whether each test

is properly placed in the scale. It is generally conceded that a test is properly placed if about 75% of the children trying it pass it successfully. Dr. Goddard drew up a table from the papers of those who tested at age, and decided from that what changes should be made in the serial order. If we were sure that those testing at age were exactly normal, and the only ones normal, this would be the proper test. It does not seem to us the best way, however, for the following reasons:

1. The method by which we reckon physical age prevents exactness. *E. g.*, a child who is six years and ten months old is counted a full year younger than a child who has just passed his seventh birthday.

2. The tests are evidently too hard or too easy for certain ages. *E. g.*, the largest group of twelve-year-old children test XI. We cannot tell from the smaller number testing XII which questions are too hard for that year. Those children may really be above normal, and the ones testing XI may really be the normal ones.

On the other hand, it seems unfair to draw conclusions from the responses of all the children taken at random. The answers of the subnormal or supernormal cannot be relied upon to settle this question. We, therefore, tabulated the responses of all the children of the three groups counted as practically normal. This gives a larger number of tests misplaced than would be found from using the papers of those who tested at age. The IV, V, and XV year tests were sometimes used. Since no children of any of these ages were tested, we can form no conclusion as to their proper place in the scale. The following tests were found to be misplaced because too hard for the ages to which they are assigned: VI; 1 3, 4:—VII; 2, 4;—VIII; 2, 4,—IX; 1, 2, 3, 5,—X; 2, 3, 5,—XI; 5,—XII; 3, 4, 5. The following are too easy: VII; 1, 3, 5,—VIII; 1,—X; 1,—XI; 3. Three of the seven-year tests are too easy, and three of both the ten and twelve-year tests are too hard. This confirms one of the conclusions drawn from the first table.

TABLE II. SECTION A.

Number in lower grade according to school standard	99=44.4%
Number in lower grade according to Binet scale	89=39.6%
Number in right grade according to school standard	121=53.8%
Number in right grade according to Binet scale	101=44.8%
Number in higher grade according to school standard	5= 2.2%
Number in higher grade according to Binet scale	27=12 %
Number below school age according to school standard	0
Number below school age according to Binet scale	8= 3.6%

It is not within the province of this paper to make any criticism either adverse or favorable, of the school system of

Columbia. It is interesting, however, to note to what extent the two systems of grading agree or differ. It is assumed that a six-year-old child should be in the first grade, a seven-year-old child in the advanced first grade, and so on.

TABLE II. SECTION B.

By Years of Retardation	1 Year	2 Years	3 Years	4 Years
Retarded according to the school system....	74	16	8	1
Retarded according to Binet scale.....	64	21	4	..
Backward according to Binet scale.....	56	13	8	2

It will be seen from this that the two systems do not agree. Following Dr. Goddard, we worked out a series of tables, analyzing this data to show the distribution of the children in the grades. We do not consider this data trustworthy for the following reasons:

1. The Binet scale is evidently to be relied upon only for approximate and not exact measurements.

2. The method of reckoning physical age precludes any accurate degree of comparison.

3. A pupil's pedagogical standing is determined only in part by his "native intelligence."

Although it is thought not worth while to include these tables (except one section, as an illustration) the results are given for what they may be worth.

TABLE III. SECTION A. THOSE TESTING AT AGE

AGE		GRADES							TOTALS				
Physical	Mental	1st	Ad 1st	2nd	3rd	4th	5th	6th	Number Tested	In Normal Grade	Number Retarded	Number Advanced	Below School Age
6 years.	VI	11	...	...	...	...	...	...	11	11	..	..	..
7 "	VII	7	15	...	...	...	...	...	22	15	7	..	..
8 "	VIII	1	2	12	...	...	...	...	15	12	3	..	..
9 "	IX	...	...	8	5	...	...	...	13	5	8	..	..
10 "	X	...	...	1	5	2	...	...	8	2	6	..	..
11 "	XI	...	...	...	2	3	6	...	11	6	5	..	..
12 "	XII	...	...	...	...	1	4	8	13	8	5	..	..
Totals		19	17	21	12	6	10	8	93	59	34	..	..

This table shows the distribution of those who are the same age, physically and mentally. For example, of the 22 seven-year-old children who test VII, 7 are in the first grade and 15 are in the advanced first grade, the normal grade for them. The seven in the first grade are retarded according to both systems.

Similar tables were made to show the distribution in the grades of the children who are one, two, three, and four years backward, and one, two, and three years above normal. The summary of results is given.

TABLE III. SECTION B. SUMMARY

	Number Tested	Normal Grade	Number Retarded	Number Advanced	Below School Age
4 years backward.....	2	...	..	2	..
3 years backward.....	8	6	..	2	..
2 years backward.....	13	5	2	5	1
1 year backward.....	56	28	3	18	7
At Age.....	93	59	34	..	..
1 year advanced.....	41	3	38	..	..
2 years advanced.....	10	...	10	..	..
3 years advanced.....	2	...	2	..	..
Totals.....	225	101	89	27	8

The totals are the same as those given in Table II. The point of interest in this table lies in the analysis of the data. Those who are retarded are in a grade below what their mental ability (as measured by these tests) would warrant. Those who are advanced are in a grade above that for which they are mentally fitted. Seven six-year-old children, and one seven-year-old child test V. They are, therefore, below school age, mentally. Of the 93 who test at age, 59 are in their normal grade, 34 are in a grade lower than that for which they are fitted, and are marked retarded. Referring to Table III, Section A, we see that 29 of them are in a grade one year below, 5 are in a grade two years below their level. All of the children who are in a grade above their level test below age. Of the 53 children who test above age, only three are in the normal grade for them, and the other 50 are in a grade below their mental ability.

According to the estimates of the teachers, the children were divided into four classes: thirty-eight Poor, sixty-eight Fair, seventy Good, and forty-nine Excellent. Table IV shows the distribution of these four classes in the three divisions, those in the normal grade, those retarded, and those advanced.

TABLE IV.

	Normal Grade	Retarded	Advanced
Poor	23=22.7%	5= 5.6%	10=28.6%
Fair	33=32.6%	20=22.5%	15=42.8%
Good	35=34.6%	27=30.3%	8=22.9%
Excellent	10= 9.9%	37=41.5%	2= 5.7%

Of the 101 children in the normal grade mentally, the larger number do fair or good work, 22.7% do poor work, and 9.9% do excellent work. Of the children who are retarded, that is, of those who are mentally capable of being in a higher grade, a very small proportion do poor work, while the largest group of all do excellent work. This is what we should naturally expect. Again, of those who are in a grade above their ability, the largest number do poor work, a small number, good, and a very small number, excellent. This parallelism between the teachers' estimates and the Binet system of classifying is significant.

The next table shows the comparative grading of the boys and girls.

TABLE V. SECTION A.

	Below				At Age	Above		
	4 Yrs.	3 Yrs.	2 Yrs.	1 Yr.		1 Yr.	2 Yrs.	3 Yrs.
Girls	1	5	8	34	58	16	7	2
Boys	1	3	5	22	35	25	3	0

SECTION B.

	Girls	Boys
More than 1 year below age	14=10.7%	9= 9.6%
Satisfactory	108=82.4%	82=87.2%
More than 1 year above age	9= 6.9%	3= 3.2%

Characteristic Responses

The responses of the Columbia children, both the successes and failures, correspond to the specimen answers given by Binet (13), Wallin (61), Lawrence (41), and others.

Year VI

1. *Morning or afternoon.* Since a certain type of child will always choose the latter of two alternatives, the order was reversed if the question was asked in the afternoon. Not three-fourths of the six-year-old children were able to answer this.

2. *Definitions in terms of use.* Binet (13) states that the value of this test is great, in the use of language, in showing the idea which the child has formed of the object, the manner in which he has conceived it, the point of view which to him is most interesting. There were three types of response: 1st, silence, or simple repetition of the word, or gesture; 2nd, definition in terms of use only; 3rd, definition in terms superior to use. The majority of six-year-old children answered in terms of use. Examples of these responses are:

A fork; is to eat with; is to pick up ham and eat with.

A table; is to put things on; to write on; to eat on; numbers, like 2×2.

A Mamma: to cook things; buys your clothes; she loves you and feeds you; keeps you clean.

3. *Execution of a triple commission.* This proved to be too hard for this year. The task was always asked as a favor, and the children responded with evident pleasure. They were often conscious of failure. Binet (13) says that at five half succeed, and at six nearly all.

4. *Right hand; left ear.* Almost invariably the children extended the left hand before the word ear could be said. Occasionally there was hesitation and deliberation. Usually those who responded correctly did so as soon as they understood the directions.

5. *Esthetic comparison.* The pictures were exposed in pairs, a pretty and an ugly one, not always in the same order. Out of 32 responses there were only two failures.

Year VII

1. *Counting thirteen pennies.* This was found to be a good test to begin with. Any slight embarrassment of the child passed away with the action.

2. *Description of pictures.* There were two types of response: 1st, mere enumeration of objects, varying from the most prominent to minor details; 2nd, description, *e. g.*, I see a man driving two horses: his wagon is full of bags.

3. *Unfinished pictures.* While this test is too easy for the majority, the reactions to it varied greatly. Many were slow to understand that some of the pictures represented heads only. Others found it necessary to study the picture closely

for some minutes; and even after careful scrutiny, some failed to detect the omissions.

4. *Copying a diamond.* The children frequently had to be encouraged before they would attempt this. Dr. Goddard said that it should be drawn with a pen to make the test more difficult. Even with a pencil, we found it too hard for this age.

5. *Naming of four colors.* This test is not one of sense perception, but of naming the colors. The mistakes most frequently made were calling green, blue and calling blue, purple.

Year VIII

1. *Comparison of two objects from memory.* This tests the ability to think of two things at once, memory, observation, and discrimination. Differences of size, color, and use were most often noted, but other details were frequently mentioned. We give some of the typical answers.

A butterfly flies around and a fly flies on sticky paper. A butterfly sucks flowers and a fly doesn't. Flies are black, and butterflies are colored. Butterflies are larger than flies.

Wood is to burn; glass to put in houses, watches, clocks. You can drink out of glass, but not out of wood. You can see through glass, but not through wood. Wood won't break and glass will. Glass will cut you, and wood won't. Glass shines, and is slicker than wood.

You write on paper, sew things of cloth. Paper will tear before cloth will. Cloth's got pretty on it, and paper hasn't. Cloth, you make clothes out of, and you write on paper. You wrap up things in paper, but you sew cloth.

2. *Counting from 20 to 1.* There was frequently hesitation before the children could be encouraged to make the attempt. Occasionally where a child spoke slowly and deliberately, and did not pause long, credit was given although the time exceeded 20 seconds.

3. *Counting stamps.* *1—1—1—2—2—2.* There were several methods of solution: 1—2—3—4—5—6; 1—2—3—5—7—9; 1—2—3—4, 5—6, 7—8, 9; or, "The first three cost three cents, and the last three cost six cents, nine cents in all. The first is the only wrong method.

4. *Repetition of five digits.* 4—7—3—9—5.

Year IX

1. *Making change.* This was entered into as a game, "playing store." The child was given several nickels and dimes, and at least eleven pennies (never enough to count out all of the change in pennies). The children were usually interested,

although the test is too hard. Various combinations, both correct and incorrect, were made. Those who failed were often unconscious of the fact.

2. *Definitions better than use.* The answers were counted superior to use if the child made some attempt to describe the object, or place it in a class, or noted the material. Examples:

A fork: Made of silver, with four prongs; A square long thing for a handle and three sharp points.

A table: A round piece of wood with four legs; Tables are of different kinds, one you eat on, one you turn trains on, and one is a counting table.

A horse: Bones and flesh and skin and blood; A big old animal; An old animal, has four legs and a bushy tail, you drive him.

A mamma: The one who makes our clothes; Right name for a mother; A person who owns a child and looks after it; She's got two arms, head, neck, body, two eyes, nose, etc.

3. *Knowing date.* This proved to be too difficult for the ninth year, although an error of two or three days was allowed. There were but few failures as to the month.

4. *Names of the Months.* One error was permitted.

5. *Arrangement of weights.* This appealed especially to the boys, who were quite willing to make more than one attempt. The greatest difficulty seemed to be with the three of lightest weight.

Year X

1. *Naming pieces of money.* The money was exposed on the desk, not in the regular order.

2. *Drawing designs from memory.* This proved to be too hard for the ten and eleven-year-old children. The number of the twelve-year-old children who tried it is too small to draw a conclusion from, but it is probably too hard for them. The two designs were exposed for 10 seconds, and then reproduced from memory. The children were allowed to see just how long 10 seconds is before the designs were shown in order that they might be better prepared. This tests attention, memory, and some analysis. We counted this satisfactory if both parts were recognizable, no account being taken of proportion, crookedness, or perspective.

3. *Repetition of six digits.* One success out of three trials was sufficient to pass this test.

4. *Comprehension questions.* This was counted satisfactory if two out of the first series, and three out of the last series were answered correctly. The last series is more diffi-

cult than the first. It was often hard to tell whether an answer should be considered satisfactory or not. We give some responses of both kinds. Exactly three-fourths of both the ten and eleven-year-old children passed this.

Late to school: Come right on; Hurry on; Cry; Stay after school—.

Taking part in an important affair: Think; Ask their mother; Don't know—Ought not to do it.

Excusing a wrong act committed in anger: Because they didn't know what they were doing when mad, almost like in a fit; When they are angry they don't do it right, and when they are not angry they do do it right; Because they might start to fighting.

Asked opinion of some one of whom he knows little: Ought to find out before telling; Tell what you know but say you did not know much; I'd say they're good because I don't know him; Say good morning or good evening; Say she's nice and pretty.

Judging by actions versus words: Because they might say good and sneak off and not do it, but you can see what they do; You can see what they do but you can't always believe what they say; Because they might talk good and act mean; Because they might be innocent and might be guilty; Because when they do well, we say they have sense; when they don't do well, people talk about them and say they haven't any sense at all—.

5. *Sentence containing three given words.* The words used were Columbia, money, and river. The answers were of three types. 1st, Three separate sentences; 2nd, Two ideas connected by a conjunction; 3rd, A single idea involving the three words. The last two are satisfactory.

Year XI

1. *Seeing absurdities in sentences.* Those who understood this entered into it as into a game, and were much amused. Others failed to grasp the idea. Specimen answers:

Unfortunate cyclist: Couldn't get well if he was already dead; Couldn't ride a bicycle if his head was broken; If he had a good doctor, he'd get well—.

Locked in a room: She'd be dead before she cut so many pieces; She didn't have anything to cut herself with—.

Suicide on Friday: Couldn't be bad luck after he was dead; Friday is a good day; There isn't any bad luck—.

2. *Three words in one sentence.* The same as X, 5.

3. *Sixty words in three minutes.* The number of words given varied from 60 to 130. While only the number given

counted, the manner of responding was significant. Some gave detached words, while others gave them in a series, different articles of dress, parts of a house, terms used in a lesson, articles of the same class, rhymes, etc. Some confined themselves almost exclusively to names of things in sight, or of things related to them. Few used abstract terms. Some who began rapidly soon exhausted themselves. Some repeated the same words several times, and others interrupted themselves to ask if the time was almost up.

4. *Rhymes.* The majority passed this. There were two forms of incorrect response that were interesting: words beginning with the same sound, as date to rhyme with day, milk with mill; words related in idea, as cotton to rhyme with mill.

5. *Dissected sentences.* The second sentence containing the word *have* caused the greatest difficulty.

Year XII

1. *Repetition of seven digits.* One success out of three trials was counted satisfactory.

2. *Abstract definitions.* The phraseology was considered immaterial if the definition contained the essential idea. Specimen answers:

Charity: Means giving to poor people; the kind of people you go with; To be nice and clean.

Justice: Means fair play; To give anybody their rights; A religious person.

3. *Repetition of a sentence containing 26 syllables.* Only three out of thirty-three were able to pass this.

4. *Resistance to suggestion.* This test is difficult. On the first three pages the second line is the longer, on the last three the lines are equal in length. The child, having said that the second line is the longer for three times, will continue to say that the second is the longer unless he "resists suggestion." Some who did "resist the suggestion" seemed unable to see that the lines on the last three pages were of equal length, but indicated first one and then the other as the longer. The question was always asked exactly according to directions. These responses were scored ± on the record sheet but were numbered among the failures in tabulating the results.

5. *Problems of various facts.* In addition to the correct responses, there were many incorrect answers given. To the first such answers as a branch, a snake, a bear, a monkey; to the second the following were given. Somebody is very

sick, the doctor has come to treat him, the lawyer to make his will, and the preacher to pray with him. The house is haunted. He is having a party.

It was sometimes necessary to use some of the fifteen year tests. The pictures used were not very suitable for interpretation. The changing of the clock hands proved interesting, but difficult. The naming of twenty words opposite in meaning is easy enough to be a twelve year test.

One Hundred Twenty-Five Colored Children Tested: A Comparative Study

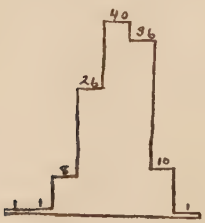
All of these tests were made at the Howard school, a part of the regular public school system of Columbia. The object in testing the colored children was not to determine the value or accuracy of the tests, but to make a comparative study of white and colored children. Even with an imperfect standard of measurement, the results obtained from giving the same tests under uniform conditions, are significant. The only respect in which the conditions vary is the testing of some colored children older than twelve years.

So far as the examiner could judge, the children felt at ease and did their best. It is quite possible, however, that an examiner of their own race might have obtained different results. Two of the children tested so irregularly that they could not be graded. One of them, an elevent-year-old boy, passed all of the six year tests, failed on all of the seven year tests, and succeeded with four of the eight year tests. These two records were not included in the tabulations which are given for the remaining one hundred twenty-three.

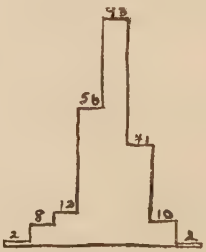
The distribution curve of the white children is here reproduced side by side with that of the colored children for the contrast. Since nearly twice as many white children were tested as colored, the curve for the whites is drawn to half the scale.

Graph II.

Section A. Colored.



Section B. White.



	Colored	White
Number testing 5 years below age	1	0
" " 4 years below age	1	2
" " 3 years below age	8	8
" " 2 years below age	26	13
" " 1 year below age	40=32.5%	56=24.9%
" " at age	36=29.2%	93=41.3%
" " 1 year above age	10= 8.1%	41=18.2%
" " 2 years above age	1	10
" " 3 years above age	0	2

The graph for the whites resembles closely that given by Dr. Goddard, but that for the colored is strikingly different. The number of white children testing at age is decidedly larger than any other group. The group of colored children testing one year below age is larger than that of those testing at age.

	Colored	White
More than one year backward	29.4%	10.2%
Satisfactory	69.8%	84.4%
More than one year advanced	0.08%	5.3%

This seems to lead to the conclusion that the colored children are mentally younger than the white. There is a difference of nearly 15% in the satisfactory group, nearly three times as many are more than a year backward, and less than 1% are more than a year advanced.

The course of study in the colored school is practically the same as that in the white schools. To what extent this difference is due to racial inferiority, to what extent to difference in the home environment, cannot be said. It is certainly not due to difference in school training. In order to make the comparison as just as possible, a comparative study was made of the city children, mill children, and colored children. There are only five grades in the mill school. Therefore only the corresponding grades of the other schools are considered in this comparison.

Graph III and Table VI show that the colored children make a better showing in these first five grades than they do in the first seven. They are still more backward than the whites, however. The proportion of colored children who are satisfactory is less than that of the mill children, which in turn is less than that of the city children. Less than 6% of the city children are more than a year backward, 18% of the mill children, and 26% of the colored children. None of either the mill or colored children test more than a year above age, while 10% of the city children do.

Professor Binet says:—"The researches which have enabled us to calculate our norms, were made in those primary schools of Paris which are situated in the poorer districts. Experience has demonstrated that the children of persons in easy circumstances present in general a higher intellectual development than that expressed by our means. Thus, in a private school, frequented by the bourgeoisie, and where the classes consist of from 8 to 10 pupils, the pupils show a mean, one and one-half years in advance of our normal means." (13, page 70.) The following curves seem to bear out this theory.

GRAPH III

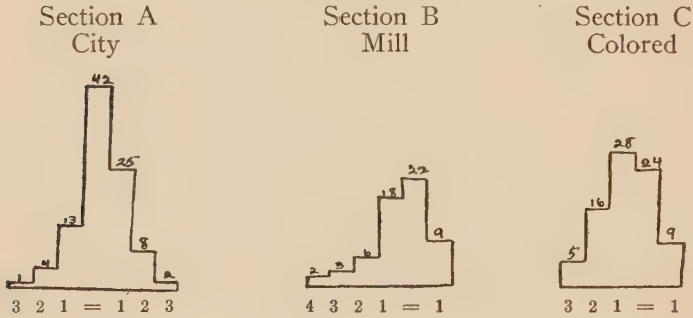


TABLE VI. SECTION A.

Number Testing	City	Mill	Colored
4 years below age	0	2= 3.3%	0
3 years below age	1= 1.1%	3= 5.0%	5= 6.1%
2 years below age	4= 4.2%	6=10.0%	16=19.5%
1 year below age	13=13.7%	18=30.0%	28=34.1%
At age	42=44.2%	22=36.6%	24=29.3%
1 year above age	25=26.3%	9=15.6%	9=10.9%
2 years above age	8= 8.4%	0	0
3 years above age	2= 2.0%	0	0

TABLE VI. SECTION B.

Number Testing	City	Mill	Colored
More than 1 year backward	15.3%	18.3%	25.6%
Satisfactory	84.2%	81.6%	74.4%
More than 1 year advanced	10.4%	0	0

In order to see whether this relative inferiority exists throughout, or whether the children of the colored race are as well endowed in the first school years, the following table was made. The children from six to twelve years old, only, are included: consequently the totals for the colored children differ from those of other tables.

TABLE VII.

	BELOW AGE		AT AGE		ABOVE AGE	
	White	Colored	White	Colored	White	Colored
6 years.....	19.4%	40.0%	30.6%	33.3%	50.0%	26.7%
7 years.....	13.9%	29.4%	61.1%	58.8%	25.0%	11.8%
8 years.....	18.5%	23.0%	55.5%	38.5%	26.0%	38.5%
9 years.....	32.2%	71.4%	41.9%	21.4%	25.9%	7.2%
10 years.....	55.1%	75.0%	27.6%	12.5%	17.3%	12.5%
11 years.....	34.6%	43.7%	42.2%	50.0%	23.1%	6.3%
12 years.....	67.5%	77.0%	32.5%	23.0%	.....	.....
Totals.....	34.5%	51.4%	41.2%	33.9%	24.3%	14.7%

TABLE VIII.

Physical Age	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	Totals
5 years..	..	..	1	..	..	..	..	..	..	1
6 " ..	1	5	**5**	4	..	..	..	..	..	15
7 " ..	..	..	5	**10**	2	..	..	..	..	17
8 " ..	..	..	3	5	**5**	..	..	..	..	13
9 " ..	..	..	..	2	8	**3**	1	..	..	14
10 " ..	..	..	..	2	7	3	**2**	1	1	16
11 " ..	..	..	..	..	1	4	2	**8**	1	16
12 " ..	..	..	..	..	..	1	..	9	**3**	13
13 " ..	..	..	..	..	..	..	1	6	3	10
14 " ..	..	..	..	..	..	..	1	3	3	7
15 " ..	..	..	..	..	..	..	1	..	..	1
Totals..	1	5	14	23	23	11	8	27	11	123

Table VIII differs from the corresponding Table I for the white children in several respects:

1. The children tested ranged in age from 5 to 15 years instead of from 6 to 12.

2. There is greater irregularity, the largest group not always falling under one of the three central divisions.

3. There are relatively more backward children.

4. The number of those testing above age is conspicuously small.

5. A larger number test one year below age than at age.

Two who tested XII passed also some of the fifteen year tests. It is quite possible that they might have made a better showing if there were tests for the years XIII and XIV. The table shows that more of the thirteen- and fourteen-year-old children tested below XII than tested at XII. It is equally probable that some of the eleven- and twelve-year-old white children might have been able to pass successfully XIII and XIV tests. Several of them passed some of the XV tests.

We conclude:

1. That the colored children are mentally younger than the white children of corresponding ages.

2. That the colored children test more irregularly than the whites.

It is quite possible that different results might have been obtained had a larger number of children been tested. The teachers selected pupils of varying ability in order that the number tested might be considered representative of the whole.

As with the whites, the comparison with the school standards is considered significant but not trustworthy. It is given for what it may be worth.

TABLE IX.

	Colored	White
In lower grade according to school standard.....	54=43.9%	44.4%
In lower grade according to Binet scale.....	19=15.4%	39.6%
In right grade according to school standard.....	59=48.0%	53.8%
In right grade according to Binet scale.....	55=44.7%	44.8%
In higher grade according to school standard.....	9= 7.3%	2.2%
In higher grade according to Binet scale.....	43=35.0%	12.0%
Below school age according to school standard....	1= 0.8%	.....
Below school age according to Binet scale.....	6= 4.9%	3.6%

TABLE X.

	Number Tested	Normal Grade	Number Retarded	Number Advanced	Below School Age
5 years backward....	1	..	..	1	..
4 years backward....	1	..	..	1	..
3 years backward....	8	..	2	6	..
2 years backward....	26	10	2	13	1
1 year backward.....	40	15	2	18	5
At age.....	36	26	6	4	..
1 year advanced.....	10	4	6	..	..
2 years advanced.....	1	..	1	..	..
Totals.....	123	55	19	43	6

According to the Binet scale, a larger number of white children are in a grade below their mental ability than above. Table IX shows that the reverse is true with the colored children; 19 are retarded and 49 (counting those who are below school age) are advanced beyond the level of their intelligence. The analysis of the data gives the following table.

The correct or incorrect placing of a test in the series was determined in the same manner as before, upon a tabulation of the successes and failures of those who did vary more than a year from the normal. The purpose of this was not to discover needed changes in the serial arrangement, but to see whether the difficulties were the same for both races. The following tests were found to be too hard: VI; 1, 4, 5;—VII; 2, 4;—VIII; 4;—IX; 1, 2, 4, 5;—X; 2, 4, 5;—XI; 5;—XII; 3, 4, 5. All except three of these, VI; 5, IX; 4, and X; 4 were found to be too hard for the whites. The following proved to be too easy: VII; 1,—VIII; 1, 3, 5;—X; 1;—XII; 1, 2. It must be borne in mind that the number of colored children tested was much smaller than that of the white: quite different results might have been obtained from testing a large number.

The examiner could not note any marked variation from the white children in the manner of responding. In almost every case, the dress, cleanliness, and manners of the children indicated that they came from good homes. The replies were usually couched in fewer words than those of the white children. There was less tendency to enter into conversation. It was soon found that they were more at least when reacting to the tests than when an attempt was made to talk with them about other things. This may have been due to the fact that the examiner was of another race.

They found the picture tests difficult. Although the majority succeeded in detecting the omissions to the pictures, it was usually after long scrutiny. The failure to choose the prettier picture may have been due to different standards of beauty for the race. The attempt to describe the pictures often resulted in a bare enumeration of objects. The tests relating to time and money, distinguishing between morning and afternoon, enumerating the months, counting stamps, and making change, gave trouble. The drawing tests, both copying and reproducing from memory, were too hard. The answer to the questions of comprehension, to the absurd statements, and to the problems of various facts were sometimes absurd or senseless; the best replies, however, compare very favorably with those of the white children. The definitions were often not better than terms of use, and frequently stated

in the language of a younger child. The comparison of two remembered objects sometimes noted points of difference not mentioned by the whites. Examples; Flies bring germs and butterflies do not. Flies get in things to eat and butterflies do not. A butterfly flies out only in the summertime and a fly all the time.

The children were divided into three groups according to color. This classification was not a scientific one and the statement of results may be entirely worthless. There were 34 dark children, 45 medium in color, and 43 light colored in this classification, 122 in all. Of the dark colored, 14.4% tested below age, 76.7% tested at age, and 8.8%, above age. Of the next group, somewhat lighter in color, 31.1% tested below age, 62.2%, at age, and 6.6% above age. Of the lightest group, 44.2% tested below age, 44.2% at age, and 11.6% above age. The darkest children are more nearly normal, the lightest show the greatest variation, both above and below normal.

Conclusions Reached as to the Reliability of the Binet Tests as a Whole, and as to the Serial Arrangement

In spite of variations in detail, the results obtained from testing the white children of Columbia compare favorably with those obtained by Goddard from testing a much larger number. To summarize briefly the conclusions already stated in this paper:

1. The Binet tests are based on the correct principle.
2. The tests are so graded that the results approximate accuracy.
3. Many of the tests are misplaced in the series.
4. While the Binet scale and school standard do not agree, neither system can be judged by the other. There is, moreover, an approximate parallelism between the findings of the scale and the estimates of the teachers.
5. The children of the mill village are inferior mentally to the children of the city.
6. The colored children are mentally younger than the white children.

From the foregoing considerations, taken in connection with recent criticisms of the tests, we arrive at the following conclusions:

I. As to the reliability of the tests as a whole:

1. The scale is based on the right principle. If it were not, the largest group would not always include the prac-

tically normal only. Ayres (7) thinks that this arrangement of the tests on an age scale constitutes the feature of greatest value in the Binet-Simon series, and that it is so important a contribution that its excellence outweighs the shortcomings of the tests themselves.

2. While the tests cannot be relied upon as accurate, they do approximate accuracy. This again is based on the fact that the three central groups are by far the largest. It is confirmed somewhat by the teachers' estimates. Huey (35) considers it the most usable "ready-made" scale available. The *Psychological Bulletin,* February, 1913, contains the reports of two retestings. Goddard reports that 464 children have had three annual testings with the following results; 49% made normal or more than normal progress, 47.2% made approximately one-half of normal progress, 1.25% made no progress, and 2.25% retrograded one or more points. These results he considers indicative of the reliability of the scale. Berry reports that 42 school children in Michigan were tested in 1911 and in 1912 with the following results. The average gain for those testing below age was 96% of a year, for those testing at age, 102% of a year, and for those testing above age, 117% of a year. This shows a close correlation with the results of the original tests; the average gain of those testing above age was 20% greater than that of those testing below age in 1911.

3. In spite of the obvious merits of the scale, we think the following criticisms, in addition to the frequent displacement up and down the scale, are just. There are certain defects which make the scale not wholly reliable.

(1) The method of reckoning age is not sufficiently exact. For example, a child who is 8 years and 10 months old is counted one year younger than a child who is barely 9, and one year older than a child who is just 7.

(2) Some of the tests are not independent of recent environmental experience. This criticism is made by several experimenters, including Ayres (7), Decroly and Degand (21), and Squire (53).

(3) There is no common plan running through the successive years. Consequently the results are not comparable from year to year.

(4) The tests assume that all children develop mentally in a regular and uniform manner. In regard to this point, Wallin says: "Just as native capacity differs with individuals, so will the capacity to acquire differ with individuals; but there is probably a certain rate of acquisition which is fairly normal in a given order of civilization, so that it is possible

to establish norms which hold for the great mass of average or typical individuals." (Human Efficiency. *Ped. Sem.*, 18, 1911, 80.)

(5) It is thought by some experimenters that they are too limited in extent.

(6) They are inadequate for the determination of the older ages of intelligence.

Notwithstanding these defects we think that the Binet-Simon scale is fundamentally correct, and that it points the way to greater possibilities.

II. As to serial arrangement:

As stated above, we found many of the tests misplaced in the series. The table below shows the order of the tests as determined by this testing of 225 Columbia children, compared with that of Goddard (30), Binet (13), and Terman and Childs (58). The tests are given as arranged in Goddard's revision; the first column shows the changes he thinks advisable. The second column gives the ranking of Binet (1911), the third column gives that of Terman and Childs, and the fourth gives our own. There was not uniformity of method in determining the place a test should occupy in the series; hence the results are not strictly comparable.

The table compiled by Bell (9) from the reports of Binet, and Levistre and Morle in France, Johnston in England, Goddard, and Terman and Childs in America, and Bobertag in Germany, reveals even greater discrepancies, a variation of three years in a number of instances. Since the majority of the tests are not influenced by environment and training, these variations can be accounted for only in part by differences in children in different countries, or in different sections of the same country. They must be due in part to the different methods of evaluating responses on the part of the different investigators, and in part to the lack of uniformity and standardization of the tests. As an example of the latter; Goddard considers the drawing two designs from memory (X.2) satisfactory if both designs are recognizable; Binet, if one is correct and one-half of the other; Terman exposes each one separately for five seconds.

TABLE XI.

	Goddard	Binet	Terman and Childs	Strong
SIX YEARS.				
1. Knowing morning or afternoon.	....	VI	V	VII
2. Definitions in terms of use. . . .	Too hard	VI	IV	VI
3. Execution of a triple commission	....	VII	V	VII
4. Right hand; left ear.....	....	VII	VI	VII
5. Elementary esthetic judgment .	....	VI	IV	VI
SEVEN YEARS.				
1. Counting thirteen pennies.....	....	VI	VI	VI
2. Describing pictures.....	....	VII	VII	VIII
3. Indicating omissions in pictures.....	....	VIII	VII	VI
4. Copying diamond.....	....	VI	VII	VIII
5. Recognizing four colors.....	....	VII	V	VI
EIGHT YEARS.				
1. Comparing two objects from memory.....	Too hard	VIII	VIII	VI
2. Counting backward from 20 to 1	....	VIII	VIII	IX
3. Enumerating days of the week.	Too easy	....	....	VIII
4. Counting stamps 1-1-1-2-2-2...	....	VII	IX	IX
5. Repeating five digits.....	Too hard	VIII	VIII	VIII
NINE YEARS.				
1. Making change.....	....	IX	X	XI
2. Definitions superior to use.....	Too easy	IX	....	X
3. Knowing date.....	Too hard	VIII	IX	X
4. Enumerating the months.....	....	IX	....	IX
5. Arrangement of weights.....	....	X	IX	X
TEN YEARS.				
1. Recognizing pieces of money...	Too easy	IX	....	VII
2. Drawing designs from memory.	Too easy	X	X	XI or XII
3. Repeating six digits.....	....	....	X	XI
4. Questions of comprehension:				
Series 1.....	....	IX	IX	X
Series 2.....	.. ....	X	XI	X
5. Using three given words in a sentence.....	....	XI	X	XI
ELEVEN YEARS.				
1. Seeing absurdities.....	....	X	XII	XI
2. Using three given words in sentence.....	....	XI	XI	XI
3. Giving 60 words in three minutes.....	....	XII	....	VII or VIII
4. Rhymes.....	....	XV	....	XI
5. Dissected sentences.....	....	XII	XII	XII

TABLE XI.—Continued

	Goddard	Binet	Terman and Childs	Strong
TWELVE YEARS.				
1. Repeating seven digits	....	XV	XIII	XII
2. Definitions of abstract terms	Too easy	XII	....	XII
3. Repeating 26 syllables	Too hard	XV	XII	Too hard
4. Resistance to suggestion	....	XII	XII	Too hard
5. Solution of problems	....	XV	XIII	Too hard
FIFTEEN YEARS.				
1. Interpreting pictures	....	XV	XV	....
2. Changing clock hands	....	....	XV	....
3. Code—"Come quickly"	....	....	XV	....
4. Opposites of 20 words	....	....	....	XII

SOME SUGGESTIONS BASED ON THE CONCLUSIONS REACHED

In the light of the foregoing considerations, we venture to make several tentative suggestions as to ways in which the scale may be improved.

1. If the present scale is to be made exact, changes must be made in the serial order. The scale needs to be more thoroughly standardized. There should be tests provided for the years from twelve to fifteen. The method of reckoning ages would more nearly approximate accuracy if counted from half year to half year. We have tried no supplementary tests, but we think the addition of other tests, such as those used by Fernald and Healy in the Chicago Juvenile Court, and by Terman and Childs in California, would make the scale far more efficient.

2. We think it might be more advisable to use Binet's principle for an entirely new set of tests. Huey (35) says we have here the right "idea" for the construction of a still better scale. Dr. Carrie Ransom Squire has devised another set of tests. To quote from her (53):—"The (Binet) tests for the different ages are not comparable; at one age certain specific mental capacities and at another stage entirely different capacities are tested. If we agree with Galton that the capacity of man can best be measured by "sinking shafts at a few critical points", these critical points should first be chosen and the shafts sunk at corresponding points for the different stages of development. The failure to do this seems to be the most salient weakness of the Binet-Simon tests.

What are the "critical points" at which we must sink our shafts if we are to estimate mental efficiency correctly. . . . Most will agree that some of the most significant factors in the determination of mental efficiency are degree of attention, keenness of perception, ability to discriminate and assimilate—in other words, ability to comprehend a situation—memory span, strength of associative connections (conditioning the rapidity and accuracy with which old associates may be recalled, as well as that ability to form new associates, which is commonly called ability to learn), constructive or inventive power and, finally, judgment." Pyle (48) says:—"We should plan a series of tests for determining the degree of development of logical memory, rote memory, attention, imagination, association, and two aspects of mind more complex, learning capacity, and reasoning."

These two suggestions seem to us well worth consideration. It would be helpful to a teacher to know that a pupil is above or below normal, mentally. It would be infinitely more helpful to know in just what respects he is advanced or backward, whether memory, or association, or imagination, or reasoning.

3. Whether the present system of tests is perfected, or an entirely new one adopted, substitute tests should be provided. If they are used to any extent in the public schools, they will soon become well known by the pupils.

4. The mental tests should be accompanied by a physiological examination. Whipple calls attention to the need of experimental and statistical study of the correlation of chronological, pedagogical, psychological, and physiological ages. (*Journal of Educational Psychology,* September, 1912.) Baldwin says that every child has five interrelated ages, chronological, mental, physiological, school standing, and moral or religious; and that these ages may or may not correspond in their stages of development. (*Psychological Bulletin,* May, 1913.) Terman (58) says that mental retardation may sometimes be temporary rather than permanent. For example, a child who is twelve years old chronologically, may be only ten years old physiologically, and may finally reach a normal, if late, maturity.

5. Finally, the imperative need is *uniformity;* uniformity in the choice of tests, in serial arrangement, in administration of the tests, in tabulation of the results. We agree with Terman that no series of tests can claim more than a rough approximation to accuracy until it has been given a painstaking try-out with many hundreds of children under widely-varying conditions of culture and training. At present, there are wide variations in all of the particulars just enumerated, even among

those who advocate the use of the Binet scale. Goddard has revised Binet, and Huey has modified Goddard. Terman has added many supplementary tests. Wallin thinks the experimentation should be based on the 1908 series. This suggestion seems to us feasible: that the American Psychological Association appoint a committee to devise a series of tests (including substitutes), with detailed instructions for their administration. In this way a widespread experimentation could be conducted under uniform conditions and the reliability of the tests established.

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[Note.—Many of the references given below are taken from the list given by Prof. Frank N. Freeman in the *Psychological Bulletin*, July 15, 1913.]

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PRACTICE IN THE CASE OF TYPEWRITING

By L. B. Hill, A. E. Rejall, and E. L. Thorndike

In 1907-1908 Mr. Hill and Mr. Rejall learned to typewrite under experimental conditions, and kept careful records of the work done daily, the errors made, and the conditions under which the work was done. These original measures have been analyzed and organized by Mr. Thorndike with results as shown in this article. He alone is responsible for the methods used and for any errors of computation apart from the original records.

The purpose of this report is to state certain facts concerning the amount, rate, limit, changes in rate, conditions, and permanence of improvement in the case (1) of typewriting one same 100-word paragraph and (2) of copying a page of approximately 300 words of changing material.

The original measures are given in full in Table I. It should be noted that since the daily task was to copy a constant amount, the daily time given to practice decreased as the experiment progressed. It should also be noted that the improvement in writing the same paragraph and in copying changing material is, in the case of either one, due to practice in both.

The Amount and Rate of Improvement

On the first day Hill copied the 100-word paragraph at a rate of 10 words per minute with 13 errors per hundred words, and copied the 300-word page at a rate of 7.1 words per minute with 19 errors per hundred words. On November 30, December 2, and December 3, after 2.4 hours of practice with the 100-word paragraph and 10.3 hours practice with changing material, he copied the 100-word paragraph at a rate of 18.1 words per minute with 1⅔ errors per hundred words, and copied the new pages at a rate of 13.9 words per minute with 3.6 errors per hundred words. On January 4, 6 and 7, after 4.7 hours of practice with the 100-word paragraph and 19.6 hours of practice with changing material, he copied the 100-word paragraph at 25 words per minute with 2⅓ errors per hundred words and the new pages at 17.9 words per

TABLE 1—ORIGINAL SCORES IN LEARNING TO TYPEWRITE

		HILL						REJALL					
		Same 100-word paragraph			300-word page of new material			Same 100-word paragraph			300-word page of new material		
Time of practice		Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words	Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words
Nov	1	10	00	13	42	00	57						
	2	10	00	12	37	00	48	15	53	8	43	50	34
	3												
	4	9	45	13	30	30	45	10	20	5	36	32	32
	5	9	00	2	31	00	43	8	50	9	33	33	33
	6	8	30	6	30	30	26	9	4	9	29	24	11
	7	7	45	7	27	30	23	7	29	7	25	29	20
	8	7	30	4	24	45	30	6	42	5	27	22	27
	9	7	5	10	26	00	24	7	8	4	25	40	19
	10												
	11	6	45	2	24	48	27	8	5	6	29	00	22
	12	7	2	3	24	30	23	6	20	9	24	23	34
	13	6	43	2	25	45	16	6	25	4	23	28	18
	14	6	16	8	25	19	18	5	58	7	23	30	23
	15	6	25	2	22	2	17	6	15	3	22	34	28
	16	?	?	3	23	23	36	7		8	22	15	26
	17												
	18	5	46	5	21	6	23	5	23	1	20		19
	19	6		4	26	26	21	5	25	8	24	35	26
	20	5	25	9	21	51	37	5	10	2	22	45	48
	21	5	38	6	22	43	25	4	58	4	22	21	13
	22	6		4	20	52	21	4	53	7	21	13	15
	23	5	19	9	21	50	11	5	8	8	20	47	18
	24												
	25	5	23	4	21		10	4	17	2	19	5	14
	26	5	35	5	20	14	12	4	38	7	18	40	23
	27	5	15	3	17	37	12	4	30	1	19	18	20
	28	5	15	1	18	29	16	4	24	6	20	20	18
	29	ill						4	32	3	19	8	32
	30	5	15	3	20	20	11	4	3	4	17	25	14
Dec	1												
	2	6	5	1	22	32	13	4	17	3	18	27	36
	3	5	15	1	22	46	8	4	10	4	18	53	18
	4	5	40	6	21		16	4	4	8	17	7	17
	5	5	55	3	22	20	3	4	30	6	19	23	10
	6	5	16	2	21	51	7	4	31	1	17	37	10
	7	4	43	0	19	25	9	Out of town					
	8												
	9	5		2	18	50	4	4	10	7	18	28	11
	10	4	30	2	19	40	10	4		11	18	38	25
	11	5	51	3	18	39	10	4		3	17	22	20
	12	4	39	5	18	9	8	4	15	2	19	20	20
	13	4	30	2	19	58	11	3	45	10	16	58	26
	14	4	48	6	19		17	3	47	11	18	25	18
	15												

TABLE 1—Continued

Time of practice		HILL: Same 100-word paragraph			HILL: 300-word page of new material			REJALL: Same 100-word paragraph			REJALL: 300-word page of new material		
		Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words	Minutes	Seconds	Errors per 300 words	Minutes	Seconds	Errors per 100 words
Dec	16	4	40	4	16	35	14	3	50	16	18	10	20
	17	4	31	1	18	30	11	Absent					
	18	4	27	7	17	20	15	3	30	7	16	40	21
	19	4	25	3	17	15	8	3	58	2	16	22	13
	20	4	22	1	17	50	4	3	51	1	16	30	5
	21	4	17	2	17	2	12	Absent					
	22												
	23	4	17	2	17	58	12	4	2	8	16	55	21
	24	4	10	2	16	55	8	3	37	10	16	18	22
	25	4	20	3	17	10	9	Absent					
	26	4	17	3	18	48	10	Absent					
	27	4	3	5	17	33	7	Absent					
	28	4	8	2	15	43	11	Absent					
	29												
	30	4	8	2	18		7	Absent					
	31	4		3	16	35	17	Absent					
Jan	1	3	55	1	17	6	8	Absent					
	2	3	57	2	16	32	12	Absent					
	3	4	2	1	16	25	11	Absent					
	4	3	50	3	16	11	10	3	38	9	16	38	33
	5												
	6	3	50	1	17	6	11						
	7	4	18	3	17		7	4		16	17	50	21
	8	3	50	2	16	20	7	3	40	6	17	22	16
	9	4		1	15	27	10	3	20	4	15	2	19
	10	3	40	2	15		19	3	45	4	16	27	6
	11	3	55	4	15	25	9						
	12												
	13	3	55	7	15	10	12	4	4	6	19	17	19
	14	3	35	2	15	20	6	3	43	2	15	20	14
	15	3	33	1	14	45	12	3	16	0	16	36	18
	16	3	23	3	15	12	11	3	52	0	16	44	14
	17	3	32	1	15	15	12	3	50	6	15	38	7
	18	4		1	14	10	5	3	42	2	15	12	15
	19												
	20	3	45	1	14	46	25	3	5	12	14	5	24
	21	3	36	1	14	30	9	3	5	5	15	28	17
	22	3	30	2	15	25	13	3	50	7	16	37	17
	23	3	25	4	14	50	9	3	8	5	15	21	20
	24	3	21	5	14	36	13	3	7	5	15	21	17
	25	3	30	2	15	25	13	3	16	8	15	18	12
	26												
	27	3	30	3	15	50	10	3	25	3	16	28	23
	28	3	34	1	14	16	7	3	22	6	14	56	22
	29	3	33	3	15	8	17	3	13	6	16	3	18

TABLE 1—Continued

Time of practice		HILL						REJALL					
		Same 100-word paragraph			300-word page of new material			Same 100-word paragraph			300-word page of new material		
		Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words	Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words
Jan	30	3	30	0	15	18	13	3	8	2	15	25	24
	31	3	34	5	15		16	Absent					
Feb	1	3	24	4	15	38	13	3	5	1	15	20	11
	2												
	3	3	18	4	14	25	13	3	7	6	15	28	11
	4	3	24	5	14		16	2	58	6	14	32	12
	5	3	25	2	13	45	13	3	6	3	14	20	9
	6	3	23	3	13	53	16	3	22	4	14	38	5
	7	3	30	7	13	35	8	3	10	4	13	56	7
	8	3	28	1	13	45	13	3	11	3	14	38	9
	9												
	10	3	26	4	14	45	8	3	25	5	15	20	5
	11	3	17	1	13	32	11	2	50	1	14	9	7
	12	3	17	4	14	12	10	3	10	10	14	22	20
	13	3	16	4	13	8	9	3	9	4	14	13	8
	14	3	21	4	15		7	3	13	3	13	15	9
	15	3	32	3	14	20	10	3	30	4	15	20	3
	16												
	17	3	16	4	13	30	10	3		1	13	52	11
	18	3	6	2	13	20	4	3	10	3	14	9	8
	19	3	5	3	13	55	16	3		4	14	35	9
	20	3	12	8	14	5	12	3	7	1	13	8	12
	21	3	20	2	15		17	3		5	14	15	6
	22	Building locked						3	18	3	13	11	8
	23												
	24	3	10	2	15	35	9	2	55	9	13	31	17
	25	3	13	1	13	55	13	2	54	9	12	34	16
	26	3	10	4	13	40	3	2	48	1	13	48	10
	27	3	8	4	13	55	8	2	43	4	13	13	10
	28	3	10	2	15	5	10	2	48	5	12	5	15
	29	3	11	8	14	30	13	2	48	2	13	8	6
Mar	1												
	2	3	35	7	14	40	9	3		3	12	42	10
	3	2	55	7	13	23	14	2	45	3	12	36	14
	4	3	1	8	13	35	22	2	56	4	13	13	6
	5	3	4	7	13	10	10	3	1	3	13	30	11
	6	3	12	3	13	6	11	2	57	7	13	50	12
	7	3	1	4	12	40	10	2	42	9	11	56	13
	8												
	9	2	48	5	13	10	16	2	35	5	11	49	10
	10	2	49	5	12	50	10	2	31	9	12	15	12
	11	2	48	7	13	40	8	2	33	3	12	30	7
	12	2	48	6	13	18	11	2	30	4	12	18	13
	13	3	6	4	13	10	16	2	29	2	14	28	10
	14	3	2	5	12	28	14	2	39	7	11	36	25

TABLE 1—Continued

Time of practice	HILL						REJALL					
	Same 100-word paragraph			300-word page of new material			Same 100-word paragraph			300-word page of new material		
	Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words	Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words
Mar 15												
16	2	49	3	13	5	6	2	37	6	13	25	14
17	3	20	2	12	35	11	2	25	6	11	47	24
18	3	3	3	12	37	12	2	30	10	12	9	12
19	3		5	12	20	13	2	24	7	11	38	12
20	2	50	6	12	50	11	2	23	6	11	55	7
21	3	10	2	12	35	16	2	39	8	11	45	14
22												
23	2	50	5	12	30	9	2	20	6	10	51	14
24	2	48	4	13		15	2	21	13	11	49	4
25	2	55	3	12	30	12	2	18	5	11	40	14
26	2	53	6	12	20	18	2	25	10	10	58	15
27	2	48	9	13	30	9	2	18	11	12	7	5
28	2	59	6	11	45	6	2	28	6	13	22	8
29												
30	2	48	3	12	50	14	2	18	9	11	43	9

minute with 3.1 errors per hundred words. On February 24, 25 and 26, after 7.1 and 29.7 hours of practice of the two kinds, his respective scores were 31.4 words per minute with 2⅓ errors and 20.9 words per minute with 2.8 errors. On March 27, 28 and 30, the last three days of the experiment, after 8.6 hours and 36 hours of practice, his scores were 35.2 words per minute with 6 errors per hundred words, and 23.4 words with 3.2 errors.

The corresponding facts for Rejall are as follows: On the first day, the 100-word paragraph at 6.3 words per minute with 8 errors, the 300-word page at 6.8 words per minute with 11.3 errors per hundred words. On November 30, December 2 and December 3, after practice of 2¾ hours with the same paragraph and 10 hours with changing material, his scores were 23.6 words per minute with 6⅓ errors per hundred and 16.5 words per minute with 7.6 errors per hundred words. On February 1, 3 and 4, after 5.2 hours and 20.9 hours of practice, his scores were 32.6 words per minute with 4⅓ errors per hundred words and 19.9 words per minute with 3.8 errors per hundred words. On March 23, 24 and 25, after 7.2 and 30½ hours of practice respectively, his scores

were 42.9 words per minute with 8 errors per hundred words and 25.2 words per minute with 3.6 errors per hundred words. A week's added practice (¼ and 1¼ hours) left these scores unimproved.

The improvement per hour of practice was greater in the case of Hill and Rejall than in the case of the subjects studied by Swift and Schuyler and Book, perhaps because the practice was distributed in much shorter period-lengths, perhaps because of individual differences such as made Rejall improve more rapidly than Hill. Using all these investigations together it appears that forty hours of well-distributed practice will enable an intelligent student to copy on the machine approximately as fast as he can by hand.

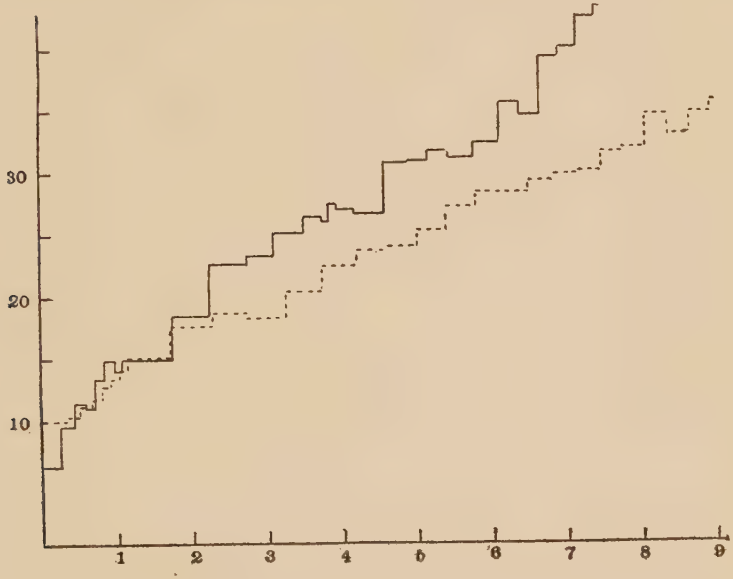

FIG. 1. The Curves of Improvement in Typewriting the Same 100-Word Paragraph. Equal lengths along the base line represent equal amounts of time given to practice. Equal heights above the base line represent equal numbers of words written per unit of time. The continuous line is for Rejall; the dash line is for Hill. The figures below the base line stand for hours of practice with the 100-word paragraph alone (i. e., exclusive of the practice with changing material).

THE LIMIT OF IMPROVEMENT

In the case of copying changing material there is, of course, no question of approach to a limit to improvement. It is also

the case that the limit was not reached by either Hill or Rejall in copying the same paragraph, their rates for the last eight weeks of practice being, in order, as follows (in words per minute):

Hill	Rejall
26.2	31.7
29.8	31.1
31.3	32.3
31.5	35.5
31.9	34.5
34.5	39.2
33.0	40.0
34.8	42.2

FIG. 2. The Average of the Two Curves of Fig. 1.

CHANGES IN THE RATE OF IMPROVEMENT

The practice curves for the speed of writing the same 100-word paragraph are shown in Fig. 1. The average curve is shown in Fig. 2. After the first few days these curves are plotted from weekly averages. The effect of any justifiable scheme of penalizing for errors upon the curves would be slight. Hill's curve shows no considerable fluctuations save the initial rapid rise, the failure to improve in Day 2 over the record of Day 1, and the drop during a week that included four days of illness. Rejall's curve shows a more pronounced initial rapid rise and also the appearance of a positive accelera-

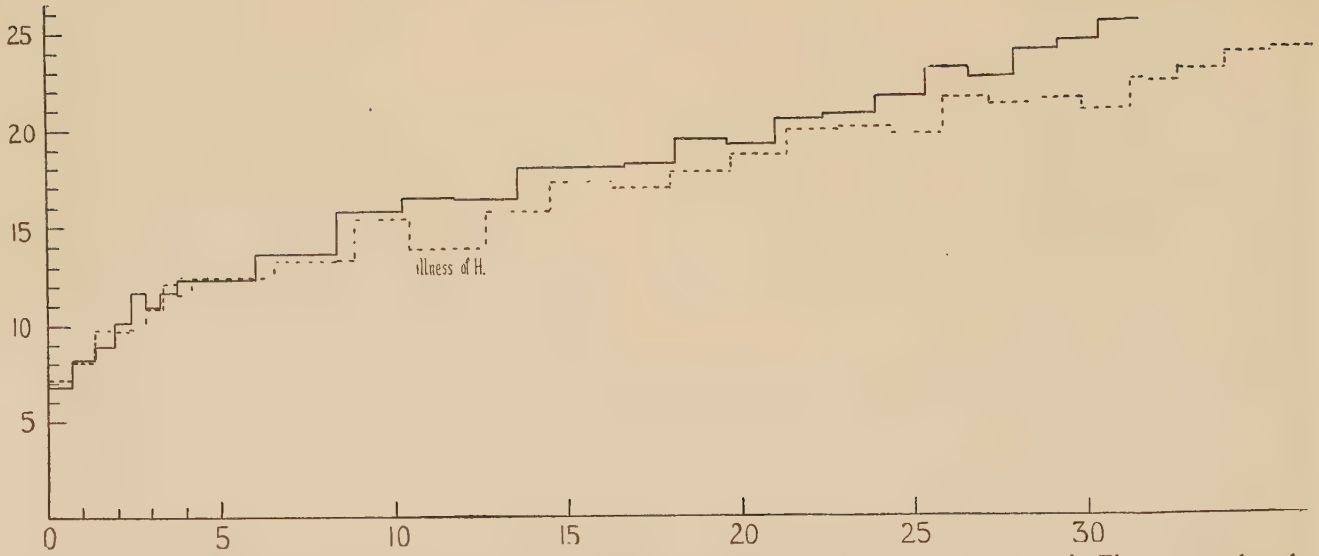

FIG. 3. The Curves of Imiprovement in Typewriting with Changing Material. Arrangement as in Fig. 1, save that the figures below the base-line stand for hours of practice with new pages alone, (i. e., exclusive of the practice with the 100-word paragraph).

tion in the last 100 minutes of practice. The absence of general negative acceleration—that is, of a parabolic form for the curve as a whole, and of any clear 'plateaus' or 'resting stages' is noteworthy.

The practice curves for the speed of copying new material are shown separately in Fig. 3; the average of the two is shown in Fig. 4. After the first few days the curves are plotted from weekly averages. These curves would be only slightly altered by any rational penalizing for errors. Except for the rapid initial rise and the drop in the case of Hill during a week that included four days of illness, there are no notable departures from a straight slope, respresenting uniform increments in speed per hour of practice.

Fig. 4. The Average of the Two Curves of Fig. 3.

The Permanence of Improvement

The records in the case of Rejall for the first day of the 114 in '07-'08, for the last ten days of the 114, and for the memory test four years and a half later, are shown in Table 2.

There was evidently a very great permanence of the old learning. After writing the paragraph fifteen times and writing fifteen of the 300-word pages, the efficiency with the single paragraph was as high as had been attained by a hundred and fourteen such exercises four and a half years before. Five hours of practice with changing material (plus about an hour on the same paragraph) brought Rejall to very nearly the same ability with changing material that thirty hours had been required to attain originally. His average score in the six days after five hours of relearning was 26 words per minute, with 5½ errors per hundred words.

TABLE 2—THE PERMANENCE OF IMPROVEMENT IN TYPEWRITING

	ORIGINAL PRACTICE							RELEARNING AFTER 4½ YEARS							
	Same 100-word paragraph			300-word page of new material				Same 100-word paragraph			300-word page of new material				
	Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words		Minutes	Seconds	Errors per 100 words	Minutes	Seconds	Errors per 300 words		
1907-8							1912								
Nov. 1	15	53	8	43	50	34	Oct. 1	4	52	3	18	50	19		
							2	3	55	3	16	....	24		
Mar. 19	2	24	7	11	38	12	3	3	30	7	15	55	22		
20	2	23	6	11	55	7	4	5	30	4	14	15	19		
21	2	39	8	11	45	14	5	.....	....	.....	.....	....			
22	.....	....	.....	.....	....		6	.....	....	.....	.....	....			
23	2	20	6	10	51	14	7	3	20	8	13	35	15		
24	2	21	13	11	49	4	8	3	5	4	13	20	26		
25	2	18	5	11	40	14	9	3	...	4	14	50	13		
26	2	25	10	10	58	15	10	2	50	11	14	25	13		
27	2	18	11	12	7	5	11	3	...	6	13	25	17		
28	2	28	6	13	22	8	12	.....	....	.....	.....	....			
29	.....	....	.....	.....	....		13	.....	....	.....	.....	....			
30	2	18	9	11	43	9	14	2	48	6	13	....	20		
							15	2	40	7	12	45	17		
							16	2	40	7	13	55	21		
							17	2	40	7	13	40	18		
							18	2	20	3	13	15	12		
							19	.....	....	.....	.....	....			
							20	.....	....	.....	.....	....			
							21	2	30	7	14	5	22		
							22	2	15	5	13	....	22		
							23	2	15	7	12	....	10		
							24	2	25	8	12	15	20		
							25	2	30	10	12	20	10		
							26	.....	....	.....	.....	....			
							27	.....	....	.....	.....	....			
							28	2	30	7	12	....	18		
							29	2	30	9	11	50	27		
							30	2	30	8	12	....	16		
							31	2	30	7	11	40	31		
							Nov. 1	2	20	9	11	20	21		
							2	.....	....	.....	.....	....			
							3	.....	....	.....	.....	....			
							4	2	15	11	11	30	15		
							5	Illness			.....	....			
							6	2	30	8	12	40	16		
							7	2	18	6	12	35	24		
							8	2	14	7	10	46	17		
							9	.....	....	.....	.....	....			
							10	.....	....	.....	.....	....			
							11	2	12	9	10	54	16		
							12	2	13	5	10	59	10		

TABLE 3—AVERAGE DAILY CHANGES IN THE TIME REQUIRED TO TYPEWRITE X WORDS, DUE TO PRACTICE FROM MONDAY TO SATURDAY, AND CHANGES FROM SATURDAY TO MONDAY. MINUS SIGNS EQUAL GAINS

	INDIVIDUAL A. E. R.				INDIVIDUAL L. B. H.			
	New Material: 300-word page		Same Paragraph: 100 words		New Material: 300-word page		Same Paragraph: 100 words	
Nov 4– 9	—130		—38		—54		—32	
Nov 9–11		+200		+57		—72		—20
Nov 11–16	—81		—13		—17		—4	
Nov 16–18		—135		—97		—137		—39
Nov 18–23	+9		—3		—9		—5	
etc.		—102		—51		—50		+4
	—20		—3		—10		—2	
		+62		+14		+132		+50
	—13		+4		—37		—16	
		+51		—21		—35		+17
	—1		—5		+2		—2	
		—15		+3		—145		—8
	—33		0		+5		—5	
		+25		+11		+56		0
	....		....		—27		—2	
		....		....		+137		0
	....		....		—22		—4	
		....		....		+55		0
	—28		—5		—20		+1	
		+170		+19		—15		0
	—49		—4		—12		+1	
		—67		—37		+36		—15
	+15		+2		+8		—3	
		+70		+9		+25		0
	—17		—5		—2		—1	
		+8		+2		—73		—6
	—10		+1		—8		+2	
		+42		+14		+60		—2
	0		+1		—5		+1	
		—88		—30		—50		—16
	—8		+4		+23		+1	
		+20		—23		+35		—10
	—5		—1		—13		0	
		—16		+12		+10		+24
	—9		—4		—24		—7	
		—7		—7		+30		—13
	—3		+1		—8		+3	
		+49		—2		+37		—13
	—20		0		—6		+4	
		—54		—19		—5		—20
	+30		+2		—9		+2	
		—89		—10		+65		—13

The Conditions of Improvement

The conditions of improvement in typewriting were not especially studied by Rejall and Hill, but their data permit us to study one sample question,—namely, that of the influence of the Sunday rest,—and to note the apparent effect of practice during an illness.

Comparing the gains from Saturday to Monday with the average gain from any one day to another from Monday to Saturday, we find the facts of Table 3.

Table 3 does not tell a very clear story, for the Sunday effect is not alike for the two sorts of work, and is not closely the same for the two individuals. In general it seems favorable for improvement in writing the same short paragraph, and unfavorable in the case of the changing material. There are also complications due to a difference, if the figures are taken at their face value, between the early and the late months of practice. The main facts appear more clearly if we combine each three successive week-records of Table 3, and replace the measure of gain by measures of the *superiority* of the Sat.-Mon. gain to the average gain from day to day between Monday and Saturday. A minus sign will equal *inferiority*. We then have Table 4.

Table 4—Superiority or Inferiority of the Saturday-Monday Gains

	A. E. R.		L. H. B.	
	300-word page	100-word paragraph	300-word page	100-word paragraph
First 3 weeks.....	—55	+12	+59	+4
Second 3 weeks*....	—48	—3	—1	—27
Third 3 weeks.....			—98	—4
Fourth 3 weeks.....	—79	+1	—24	+5
Fifth 3 weeks.....	+4	+4	+16	+9
Sixth 3 weeks.....	—6	+6	—30	—2
Seventh 3 weeks.....	+33	+11	—40	+18
Average.....	—25	+5	—17	0

*4 in the case of A. E. R.

The change from early to late months appears most clearly if Table 3 is condensed into three divisions for the first nine, the next six, and the last six, and if the two individuals' records are averaged. We then have Table 5.

It appears that in writing the 100-word paragraph during the last twelve weeks practically no improvement was made from Monday to Saturday.

TABLE 5—AVERAGE DAILY CHANGES IN THE TIME REQUIRED TO TYPEWRITE X WORDS, DUE TO PRACTICE FROM MONDAY TO SATURDAY AND THE CHANGES FROM SATURDAY TO MONDAY

Average change from one practice-day to the next. Minus signs equal gains.

	MONDAY TO TUESDAY, ETC		SATURDAY TO MONDAY	
	300-word page	100-word paragraph	300-word page	100-word paragraph
In the first 9 weeks.....	—26	—9	+2	—7
In the next 6 weeks.....	—11	—1	+10	—6
In the last 6 weeks.....	—5	0	+7	—8

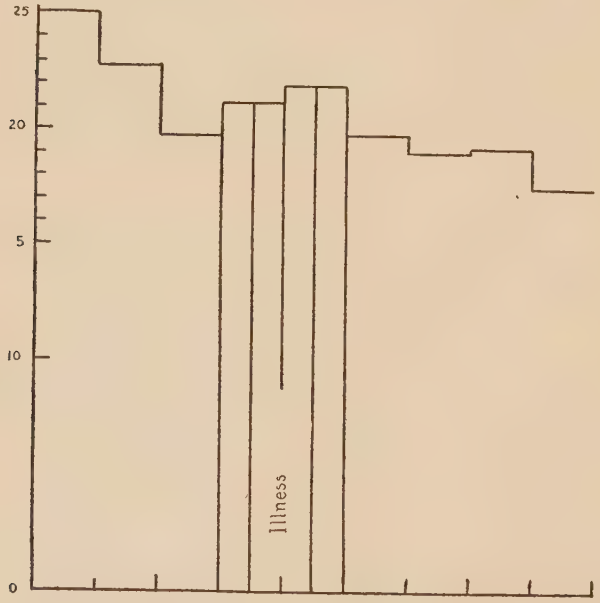

FIG. 5. Efficiency in Typewriting the Same Paragraph of 100 Words, before, during, and after illness. Subject, Hill. (Each unit along the abscissa equals three days; the two three-day periods of the illness are so marked; the height of the curve equals the time required to copy the paragraph.)

The only notable differences in physical condition reported were an illness of several days (Dec. 2, 3, 4 and 5) and a bad cold on one day (Jan. 4), both in the case of Hill. The latter seemed to slacken improvement somewhat; the former was almost surely associated with such slackening. The ordinary ups and downs from day to day were so great that the trend of the curve over a fairly long interval has to be examined for evidence. Figs. 5 and 6 show the facts in the case of the longer illness. There can be little doubt of the harmful temporary effect of the illness on efficiency, and it seems to have reduced improvement in the case of typewriting new material. That the practice during the illness was any less beneficial than ordinary practice to the function of copying the same paragraph, seems dubious.

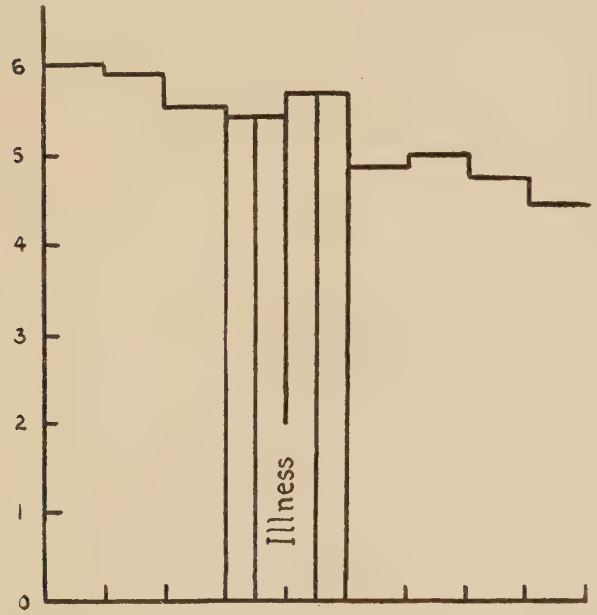

FIG. 6. Efficiency in Typewriting New Material, 300 Words Daily, before, during, and after illness. Subject, Hill. (Each unit along the abscissa equals three days; the two three-day periods of the illnes are so marked; the height of the curve equals the time required to copy 300 words.)

EDUCATION AND SOCIAL CONDITIONS

By Jonathan F. Scott, Ann Arbor, Michigan

One of the most striking phenomena of modern times is the extraordinary confidence in the efficacy of education as a progressive force. Ardent admirers of its powers hold that education is destined to become the great factor in human evolution, the chief means by which a higher and better society is to be produced. Some believe that it can be substituted for religion as the basis of ethics. Ross says, in this connection, "The ebb of religion is only half a fact. The other half is the high tide of education. . . . . As the state shakes itself loose from the church, it reaches out for the school. Step by step with the disestablishment of religion proceeds the establishment of education."[1] In view of this attitude it is worth while to show how education has been limited in the past, and is likely to be limited in the future, as a force in human progress.

In the first place, history shows that types of education are the outcome of social and economic conditions rather than original influences shaping these conditions. An educational system intensifies the dominant conceptions and ideals of a civilization and helps to perpetuate them. It is therefore more useful for carrying out existing ideals than for creating new ones; it is narrow, too, in so far as the social conditions from which it is derived are narrow. In a word, its limitations are those of the civilization out of which it grows.

Second, history shows that a type of education once created tends to persist after the forces that gave it birth have passed away. It may even be transplanted to an entirely different civilization. Periodical adjustments are therefore necessary to bring education into harmony with living social forces.

The problem of establishing the best type of instruction does not end here, however, for the forces to which the educational system adjusts itself—though these are the dominant forces of the existing civilization—are not necessarily those which will ultimately make for the highest progress of society. In fact, it is quite possible that these forces have already been overemphasized and that what is necessary is not a further

[1] Social Control, p. 175.

emphasis of them but a reaction against or a new evaluation of them. In other words, if education merely strengthens the bias of a civilization it is distinctly limited as an instrument for the service of humanity.

A survey of various types of education in the past will bring out more clearly these limitations, and will indicate the danger to society of attempting to substitute education for religion.

Sparta furnishes a conspicuous example of a narrow educational system growing out of the conditions of the time. Sparta's great problem was a military one. Only through eternal vigilance could she maintain her haughty oligarchical control over Perioeci and Helots, while her ambitious dreams of conquest accentuated the demand for a rigorous training of her citizens. This training she could afford to give, partly because the labor of Helots relieved Spartan citizens from the necessity of supporting themselves. The children were educated by the state and were subjected to the severest discipline. Education was almost entirely physical. Courage and endurance were fostered, but at the expense of the gentler virtues. Loyalty to the state was strengthened, family life weakened. Their system of education was narrow and brutal, though it carried out Spartan ideals and thus helped to make of the little Lacedaemonian community a great state.

Education at Athens was no less the outcome of social and economic conditions than at Sparta, but Athenian civilization was broader and her education therefore more diversified than that of her rival in the Peloponnesus. Athens did, indeed, find it necessary to be well prepared for war and revolt, and therefore developed an efficient system of physical and military training. But danger from external and internal enemies was not as great at Athens as at Sparta, and the Athenian youth had opportunity to turn to other forms of instruction. This education, other than physical and military, was made possible, however, by "the existence of a large class of slaves to do all the drudgery of life, and to leave the dominant class free for higher pursuits and amusements."[2] It was an education not of the whole Athenian people, but of a small upper class,[3] and it was intended to prepare for "the rational enjoyment of leisure hours." Up to the age of Pericles this kind of education consisted almost entirely of music and letters.

As individualism developed in Athens and loyalty to the state began to give way before "eudaemonism" (the search

[2] Mahaffy, Social Life in Greece, p. 259.
[3] Freeman, Schools of Hellas, p. 289.

for personal happiness) the range of instruction increased. Towards the end of the fifth century a diversified system of what may be called secondary education began to appear. Philosophy, mathematics, drawing, painting, and above all rhetoric, were among the subjects taught. It was not eudaemonism alone that underlay the study of rhetoric, for with the growth of democracy a young man might hope, with a knowledge of this subject, to carve out for himself a career in the law-courts or in politics.

With all this intellectual brilliancy, however, Greek civilization was decaying. The old religion gave way before the advances of skepticism. The ravages of war and the declining birth-rate caused depopulation. Expenditures increased and revenues shrank, patriotism lost its lustre and other virtues weakened. It was then that philosophers formulated elaborate schemes of education for the rehabitation of Greek life, but education showed itself utterly unable to meet the situation. The increasing effeminancy of the Greeks was reflected, as was seen even as early as Aristophanes' time, in the effeminacy of education.[4] The schools of the philosophers served to increase eudaemonism and to incline youth to a life of contemplation and intellectual speculation, at a time when the active virtues were most needed. Greek civilization perished in a blaze of intellectual and artistic glory, and the great social problems remained unsolved until the advent of Christianity.

Little need be said here of Roman education, for after Rome had passed from barbarism her learning was chiefly taken from Greece. On taking over this education, however, Rome emphasized those subjects best suited to her conditions, and in particular laid stress on rhetoric and oratory, which in the days of the republic were of great practical importance. "It must be recalled," says Monroe, "that public oratory then performed the function that is now divided between the press, the pulpit, the bar, and the university."[5]

Western Europe having fallen into a condition of semi-barbarism with the decay of the Roman Empire, it became the duty of the Middle Ages to fuse what it could of the old Roman civilization with the new barbarian elements. Christianity appeared, with ideals destined to dominate humanity and to influence civilization for centuries. Christianity, institutionalized through the Catholic Church, took upon itself the task of educating the barbarian, using for this pur-

[4] Davidson, Education of the Greek People, pp. 92 ff.
[5] Monroe, Text-book in the History of Education, p. 163.

pose not merely the Bible and other religious writings, but also something of the material provided by Greece and Rome.

The existing Graeco-Roman curriculum was reshaped somewhat to meet the new social conditions. The seven liberal arts taught in the Roman schools of the later Empire[6] became the basis of medieval school-study. But grammar must point morals and yield itself to mystical interpretations; arithmetic and astronomy must find a large part of their value in calculating the date of Easter. Dialectic must aid in the refutation of heretics, its aptness for this service leading churchmen to value it highly. In general, the cloak of religion was thrown over the old pagan curriculum, and on its head was placed the crown study—theology. Education became a discipline, a means to prepare the soul for the future life. Thus the Middle Ages crystallized its ideals and aspirations in its educational system; and the narrowness of the civilization was mirrored in the narrowness of the instruction.

At the close of the Middle Ages social conditions brought to the classical literatures a new importance in education. Renaissance and Reformation united to do them homage.

It has been said that the task of the Middle Ages was to educate the barbarian up to a point where he could carry on the civilization of the world. The Middle Ages could not take up the work of civilizing Europe at the point where Rome stopped, for the medieval man was incapable of comprehending Roman civilization and was more or less antagonistic to it. Much of the literature of antiquity was lost or buried in monasteries. Gradually, however, the religious opposition to antiquity decreased in effectiveness, the things of this world exercised a stronger appeal, the writings of the Greeks and Romans became accessible in larger numbers to Western Europeans, and were better comprehended than in earlier days. In a word the spirit of the Renaissance developed.[7]

When this power of understanding the ancient world had been achieved, what could be more natural than for the European to turn back with enthusiasm to the literatures of Greece and Rome, beside which most of the writings of the Middle Ages were as the compositions of children? Europe came to look upon the classics as the only true sources of culture; it turned to them also as the great reservoirs of practical information. "It should be remembered," says Woodward, "that one obvious motive to the reading of classi-

[6] Abelson, The Seven Liberal Arts, p. 6.

[7] The question of the time at which the classical Renaissance began need not concern us here. There was an important humanistic movement in the eleventh and twelfth centuries. But the roots of the Renaissance extended back even farther into the Middle Ages.

cal, and particularly of Greek authors lay in the fact that every student of antiquity, and of the ethical and scientific lore enshrined in ancient literature, was compelled to have recourse to original sources. . . . . To read Roman history involved of necessity a first-hand study of Livy. Greek history was only to be had from Thucydides, Zenophon, or Plutarch. Geography must be learnt from Strabo or Ptolemy, Mela or Dionysius. Aristotle, Theophrastus and Pliny were the indispensable manuals of science."[8] Thus antiquity profoundly modified European civilization; and the schools, responding to this change, gradually gave to the classical writings a leading place in the curriculum.

The great revolt against the Catholic Church had its share, too, in altering the studies of the schools. In the hands of the clergy lay the responsibility for the interpretation of the Bible, for the exposition of correct theology. In the theological warfare between Protestants and Catholics, in the combats among the various Protestant sects, matters of doctrine became all-important; and the Scriptures had to be studied in the original tongues, Greek and Hebrew, in order to avoid incorrect interpretation as far as possible. Nor could any theologian afford to neglect Latin, the language of the bulk of ecclesiastical writings.[9]

It is thus easy to see why Latin and Greek became the staples of study in the schools. Western Europe, its preliminary education completed, must build upon antiquity in order to carry on the civilization of the world.

Religion, also, saw in the classical languages and in Hebrew the keys for unlocking the Scriptures, the weapons of theological warfare. Thus a dominantly classical education met the social demands of the time.

It has already been pointed out that education does not always respond readily to the demands of new social forces. So strong are the influences of tradition, inertia and conserva-

[8] Education during the Renaissance, p. 19; other examples of the practical value of the classic writers might be cited:—Cicero and Quintilian for oratory, Vergil for agriculture, Galen and Hippocrates for medicine, Euclid for geometry, etc.

[9] In the oft-quoted preamble of the Massachusetts school act of 1647 lies a good illustration of the emphasis laid by Protestants on the teaching of languages, with the reasons therefor: "It being one chiefe piect of y^{t} ould deluder, Satan, to keepe men from the knowledge of ye Scriptures, as in form^{r} times by keeping y^{m} in an unknowne tongue, so in these latt^{r} times by pswading from ye use of tongues, y^{t} so at least ye true sence & meaning of ye originall might be clouded by false glosses of saint seeming deceivers, y^{t} learning may not be buried in ye grave of o^{r} fath^{rs} in ye church & commonwealth, the Lord assisting o^{r} endeavo^{r}s,"—etc.

tism over systems of education that these are not easily reconstructed, no matter how pressing the demands from the outer world. The studies of rhetoric and oratory, of so great practical value in the free days of the Roman Republic, retained their place in the schools under the imperial hierarchy, serving chiefly to set the sign of culture on a decadent aristocracy. The curriculum of the Roman schools in the last centuries of the empire was taken over by the Middle Ages and, somewhat modified, held its own in church schools for centuries in spite of the antagonism of medieval ideals to those of Rome.

In the same way the classics long held their prominent position in education, in spite of the fact that their value to society was inevitably decreased as civilization changed and advanced.

The very fact of its absorption by the modern world lessened the value of antiquity in European education. This process of absorption went on gradually. The classic writings which had opened up a new world to the European of the Renaissance were translated into the vernacular languages and thereby the need of turning to the ancient tongues was diminished. Furthermore, vernacular literatures, French, English and Italian, arose to rival in beauty and grace the writings of Greece and Rome. Homer, once the incomparable, yielded to the supreme genius of Shakespeare. Out of the spirit of the Renaissance, fed by the writings of Aristotle, Galen, Eratosthenes and others of the ancient writers, rose the current of modern science, deflected somewhat from its course by the theological strife of the sixteenth and seventeenth centuries, returning to its channel and growing to a mighty stream in the eighteenth and nineteenth. Through experimentation, investigation and research a vast body of knowledge unknown to the ancients, but affecting life on every side, was given to the modern world. This new knowledge, as well as the new literature, had ultimately to find its place in the schools.

The reasons offered by religion for the study of the classics lost weight, too, as civilization altered. Religious zeal waned, especially after the Thirty Years War, and the careful interpretation of the Bible became of less and less importance; men were turning to other interests. With the growth of science and the parallel development of philosophy, the world became more skeptical; men questioned even the fundamentals of Christianity. The questions of these skeptics could not be settled by proof from the Bible, for the truth of the Scriptures themselves was doubted. The old weapons

furnished by the study and interpretation of the holy writings were too dull for the battle with the new knowledge.[10]

Two other influences which have worked powerfully to shape our modern civilization have injured the power of the old classical education. Democracy has given the common man an amount of power that would astonish his predecessor of a few centuries ago. Through the extension of the suffrage he has come to share in governmental activities and is constantly forcing some new recognition of his strength. The ultimate effects of the spirit of democracy on education no one can yet foresee, but they certainly do not tend toward a dominantly classical curriculum.

The other important influence is that of commercial and industrial advance. With the opening of the modern era, began a commercial development which in the seventeenth, eighteenth and nineteenth centuries grew to enormous proportions. In the eighteenth century the invention of labor-saving machinery initiated the Industrial Revolution. Science was harnessed to the chariot of industrialism, and made to draw it along the road of material progress. Great smoky cities sprang up, holding out grimy beckoning hands to the workers on the farms. The middle class—manufacturers and tradesmen—gained enormously in power and importance, and their ideas and modes of living have profoundly affected modern civilization.

With the changed social conditions resulting from these influences the old classico-religious education, growing out of Reformation and Renaissance, bore no very close relation. But so deeply was it rooted in the school systems of Europe and America that it persisted long after the forces that gave it birth had lost their vital power.

Gradually, however, modern civilization has been forcing an adjustment of education to its real or supposed needs; we are in the midst of this adjustment to-day. During the past century the ideal of democracy, working with other influences, especially the economic, has brought about the general establishment of free public schools in the United States. But there is a wide-spread feeling that the school has not responded sufficiently to the economic demands of the age. Commercialism and industrialism have become factors so powerful in civilization that the school cannot afford to ignore them; the practical, utilitarian character of our modern world demands their recognition.

Hence the emphasis on industrial and vocational education.

[10] It is interesting to note, however, that these weapons are still used by some clergymen who seem to think them sufficient to conquer the enemies of religion.

The economic pressure on the American school is particularly strong at the present moment. With the passing of frontier conditions in our country, competition is increasing among workers and there is less and less room for the untrained mechanic. The old apprentice system has virtually passed away, and no adequate scheme of instruction has yet been established to take its place; manufacturers complain of the dearth of skilled workmen. American manufacturers are invading foreign markets and attempting to compete on equal terms with the manufactures of countries that have definitely adopted systems of industrial and technical education. The economic success of Germany is attributed largely to her adoption of this sort of education, and American national ambition demands the use of the same means. In general it may be said that as success in the economic struggle seems to our age all-important, the future is likely to see the adoption of a type of education far more practical than that of to-day.[11]

In this success lies the possibility of danger. As in the past education has been too military, too unmoral or too religious, so in the future it may become too utilitarian, thus intensifying the practicality of a civilization already over-materialistic. No doubt more practical instruction of the kind now coming to the front is truly needed for the solution of present problems, but if it dominates the school, society will ultimately suffer.[12]

There are, indeed, possibilities of a broader education in the future than the past has yet known. The tendency is stronger to-day than ever before to psychologize education, to adjust it to the needs, interests and capacities of the child; and as the nature of the child is many-sided, so we may perhaps have an approach toward a many-sided education. The school may thus lay a necessary emphasis on certain factors which the existing civilization minimizes. But even so, studies which are not in harmony with the prejudices of society at any given period will find it hard to secure a place of importance in the curriculum.

The limitations from which education has suffered in the past show, then, the danger of attempting to substitute it for religion. The great strength of religion lies in the fact that

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[11] Scott, J. F., Economic Reasons for Vocational Education, Pedagogical Seminary, June, 1913.

[12] At the present time the attempt is being made to retain the old instruction while introducing the new. The result is that the curriculum is frequently loaded down with a great variety of subjects. Will the school be able to carry this burden? Will not many of the older studies either disappear or occupy a much smaller place in the school programme?

it can furnish high ideals and supply the motive power for carrying them out. Thus it can be and has been a great force in human progress. " In the world's history," says an eminent scholar, " no culture, no education, no political training, has been able to rival the mature and ultimate effects of Christianity in humanising society."[13]

Education is an instrument rather than a creative force. Its history shows it to have been the outcome of social and economic conditions. It has been useful in intensifying these conditions, in carrying out existing ideals. But it is doubtful whether it can, of itself, create the influences by which humanity is to be uplifted; for these we must look elsewhere.

[13] Mahaffy, Social Life in Greece, p. 237.

THE TEACHER'S NEED OF A COMMUNITY LIFE

By Martha MacLear

The teaching profession is one of the most taxing as well as one of the most engrossing of all the professions. It may be compared with the ministry in that it seeks to develop character; with medicine, in that it aims to preserve and restore health; with law, in that it acts as mediator between the public and the schools; with social work, in that it feels the necessity of knowing the home environment of the pupils and social conditions of the city. If this were not enough, the members of this profession are required to rival the business world in the keeping of records, accounts and statistics; the tact of a diplomat; the stern discipline of a policeman; and the reassuring gentleness of a mother. All of this is aside from any teaching per se which may be required or any amount of scholarship that may be needed to make the work effective. In the light of these facts, the wonder is not that so few men go into teaching but that any go; not that there are so few first-class teachers but that there are any; not so wonderful that the profession needs holidays and that so many lose their health but that any survive.

We hear a great deal about untrained teachers and no one can deny that the accusation holds good. But one might well pause and ask in what way they need more training. Is more book knowledge needed? undoubtedly yes. Is more training in method needed? assuredly so. But will these meet the requirements of such a taxing profession? Can mere book knowledge or facility in method make one capable of assuming all the offices of a lawyer, a minister, a doctor, a diplomat, a mother, a policeman or a business man? Book learning and method will help in the simple art of teaching, but nothing can avail for success in the difficult art of education but a wide acquaintance with life itself.

The stricture has been made that a teacher goes out of one door of the college or normal school and straightway into the door of the school. Enclosed always between four walls, little or no acquaintance with life is had. In addition he is so shut in by the walls of class that he is afraid to move in any human direction for fear of losing caste. Temperamentally the profession inclines to bookishness and intellectual snobbery. These conditions the colleges and normal schools can help only indirectly. Especially are the normal schools, which draw their clientele from a small locality, powerless to meet such a need. A large university offers better opportunity, but at best can offer only the suggestion that such a need exists and point the way to the remedy.

What road shall the teacher pursue to fit himself to meet all the requirements that will be made of him? What can he do to make himself fit to be a leader in the community, for a teacher must be a leader or he is recreant to his trust. There is one way and only one way to even approximate such an all-round development and that is by becoming an integral part of the community life.

Teachers live too much to themselves. They form too much a class apart. They are so prone to become over much engrossed in the small details of their profession (this, of course, is especially true of women), that they forget the larger outlook. All teachers can talk about their grade or school; few teachers can talk about education in a large way. A year or so ago I had a striking example of this limitation. I tried to form an educational club of teachers, but failed. The reason given by all was that they were too busy and that, as we were not teaching the same subjects, there could be no points of common interest. In other words, they were so engrossed with the details of their own small sphere that they had no time to give to a larger vision.

What does it mean to become part of the community life? It means to be recognized as a vital member of the community, as a personality, not as a teacher. It means to be able to feel the throb of the community life, to be alive at all points to what is going on; to be able to talk, without dogmatism, to any one, from the learned scholar to the frivolous society girl, from the club woman to the tired mother. In short, it means to be alive with human sympathy and interest for all phases of life and for all conditions of men.

But how may this be accomplished? First by keeping oneself in good physical condition, for the world always looks askew to a sickly person. With good health as an asset, it will be easy to make friends with all kinds of people. At the risk of being accused of lack of esprit de corps, I would say that it is best for a teacher to have the most of his friends outside of the profession. Three or four teachers at most might be the quota. The rest of his friends might well be lawyers, doctors or business men, especially some social workers. An actor or musician, a soldier or an artist would be valuable additions to his circle.

One can readily see that such a circle of friends would call for the development of various sides of a man's nature. It would necessarily broaden his interests and lead him into paths far afield. But he would return to his work with mind refreshed and hope renewed.

But there are other friends, besides living ones, who cannot be neglected. There are books, the guide and comforter of many hours, which one cannot afford to overlook. Not only are the classics waiting to give us inspiration but there are a host of contemporary writers for whom it is worth while giving up a bit of gossip or a moving picture show. Galsworthy, Chesterton, Bernard Shaw, Synge, Yeats, Masefield, Noyes, and a host of others are doing work that should receive our consideration.

Then there are concerts and plays, lectures and political meetings, the daily press and one good club at least. All of which are as necessary to the well-being of a teacher as the food he eats.

Quite as essential to the welfare of the profession is a hobby. Educationally it is called an avocation—some commanding interest outside of one's specialty. It may be art, it may be music, it may be walking or birds or flowers, it may be equal suffrage or reform. Any live issue will be of inestimable value in keeping the teacher young and alert. And such an extra-curriculum activity will be like a live wire in making connections with the life of the community.

The question may well be asked, where is one to find time for all of these activities? By first going to his task well prepared in his profession; by making haste slowly until he has found himself, for all good things are worth waiting for.

Among the many things extraneous to the curriculum that we

learned at college was this—Never attend a faculty meeting unless due notice of a week's time has been given. For it is impossible for a superintendent or principal to buy a teacher body and soul. The time outside of school hours belongs to the teacher and cannot be taken by the principal unless due notice is given. This is to look at the school from the teacher's viewpoint but such a view must be taken if teachers are to grow.

It is unwise to spend much time on details; better slight the non-essentials. It is never wise to be a slave to correcting papers, especially English papers. If the school will not provide a reader of compositions, the teacher might correct only three out of five. No school has a right to stunt a teacher's growth. One great leakage is the time spent gossiping about the other teachers or the pupils or criticizing the principal or supervisor. Work easily done, without worry, is among the first essentials to the gaining of leisure. If the teacher is to be to the school all that he should be then he must be a vital, well-rounded personality. And he can be this only through having a certain amount of leisure to mingle in the community life. It is absolutely necessary that he have some life outside the school. It is a vivid realization of what life is and what life means that make for a vital individuality, the only kind of individuality that counts in unconscious tuition, which, after all, is the largest part of any work in the school. It is by the power of suggestion that we accomplish the most for our students. At best we can give them only a modicum of knowledge. But we can inspire them to live, if we ourselves are vividly alive.

CONTRIBUTIONS OF THE DANISH ANTHROPOLOGICAL SURVEY TO CHILD-STUDY

By A. N. Gilbertson

In 1904 was appointed, under the auspices of the Danish government, an Anthropological Committee, for the purpose of conducting an anthropological survey of Denmark. The Committee has published a partial report of its researches, which are still being continued. The report, entitled "Meddelelser om Danmarks Antropologi" (Communications on the Anthropology of Denmark), consists of studies on the physical characteristics of the Danish population, including the height and weight of the body, the form and size of the head, the correlation between the height of the body and the dimensions of the head, the color of hair and eyes, etc.

Several of the studies are of special interest from the standpoint of child-study. Two of these, by Povl Heiberg and H. J. Hansen, are on the weight of new-born children; one, by Poul Hertz, is on the growth of children during school years, and two, by Sören Hansen and Harald Westergaard, deal with the question of the alleged inferiority of first-born children.

The Weight of New-born Children

Heiberg makes a searching examination of the data on the subject already found in the literature. He finds that most earlier writers were too content with loose statements and further that they laid too much stress on extremes. Thus he, criticizes Vierordt, in the much-used "Daten und Tabellen" (1906) for bringing together data given by some thirty writers, without any critical analysis of the relative value of the data. For instance, Vierordt gives 252 observations of one investigator the same weight as over 3,000 of another.

The author emphasizes, and illustrates from earlier studies, the necessity of extreme care in securing and analysing data. "General averages are worthless, unless the components and their relative values are known," for instance, the sex of the children, the proportion of first-born, accuracy of the weighing, etc. The difference between the weights of boys and girls is so great, that fairly small changes in the relative numbers of the two sexes will affect the average. Further, it has earlier been shown that the weight of the first-born is less than that of the later children. The changes this difference may make in the general average can be understood from the fact that the average weight rises by no less than 75 gm. in each successive birth.

As an example of the importance of exactness in weighing the child the author gives the following: "In the case of 3,000 children the average weight measured to 50 gm. was 3,378.0 gm., but if the weight is taken no nearer than 150 gm. this average weight would be 3,376.5 gm. and with an exactness of only 250 gm. (about half a pound) on each weighing, the average would be only 3367.7 gm." He points out that "the tendency of observers to discard the lowest values and to prefer even numbers must also be taken into account."

Since the difference in the average weight of new-born children in two groups is necessarily of small dimensions, the material must be collected under very strict conditions. These conditions the author summarizes as follows: "In each of the two groups the number of records must be at 2-3000 (the average error would then be about 9 gm.). The sex of the children, also whether first-born, second-born, etc., must be known. Further, the exactness of the weighing should be stated, as also where and how the lower limit is determined. Other details should also be considered (*e.g.* the exact time when the weight has been taken in relation to birth and so on.)"

The data analysed by Heiberg consisted of records of over 3,000 new-born children from the provinces and from the maternity hospital in Copenhagen. H. J. Hansen's calculations are based on data concerning some 6,000 children. The latter data were collected during ten years of his country practice as district physician. He makes a comparison between these data and others from the maternity hospital in the capital. Heiberg also treats separately the records from the provinces and from the Copenhagen institution.

Both investigators find a significant difference in the average weights of the two groups of children, the weight of the new-born in the rural districts being greater than that of the hospital infants.

He finds that the weight increases with successive births. A like result is obtained by Heiberg. The latter, after allowing for this factor, concludes that there is no correlation between the age of mother and the weight of the child at birth. Hansen's calculations, on the other hand, disclose, after a process of elimination, an influence exerted by the mother's age on the increasing weight of the successive children. But this factor he considers as of minor importance. "The weight depends much more in general on the number of previous births than on the age of the mother."

This author takes up the relation between the weight of successive children and the age of the mother at her first pregnancy, to determine whether there is an optimum period for the beginning of child-bearing. He finds that the children of mothers beginning child-bearing between the ages of 30 and 34 inclusive have the greatest average weight, exceeding those of women who enter upon maternity at an earlier or a later age. Hence, according to Hansen, "the age-group 30-34 years seems to be the optimum period for the beginning of child-bearing, judged by the standard of the weight of the later children."

A correlation between the economic condition of the mother and the weight of the new-born child is revealed in the figures from the country districts, the more favored the position of the mother is in this respect the greater is the weight of the children. But a comparison of the results from the poorest classes in the rural communities with those from the maternity hospital in Copenhagen shows a considerable difference in favor of the former.

The author then goes on to determine whether this difference may not be due to the preponderance of illegitimate children in the Copenhagen records (about 80 per cent). First he compares the weight of the legitimate and illegitimate children in his own records from the country, taking account, by successive eliminations, of three factors which might enter into the result, namely, age of mother, number of children, and economic condition. The result shows that the illegitimate children are smaller than the legitimate. Then comparing the results from the illegitimate children from the country with the material from the maternity hospital, the author finds that the country children of this group weigh more than the hospital children. This

in spite of the fact that the mothers of the latter average two or three years older. "Thus," he concludes, "it is not merely the illegitimacy which reduces the weight of the children, but much more the poverty." For while the unmarried mothers in the country are as a rule poor, this is even to a greater degree true of this class in Copenhagen. Then too life in the country is on the whole more healthful than in the metropolis, a circumstance which may be presumed to have an important influence on the weight of the children.

Reference is made to the well-known folk-belief that so-called "children of love" are especially vigorous. But our Danish authority points out that if this circumstance should be investigated, the distinction should be made, not between legitimate and illegitimate children, but between those *conceived* before and those conceived in marriage. "To have this matter investigated would be of interest, but it would necessitate an extensive study of church records," he concludes.

Another point considered by Hansen is whether there is any correlation between the weight of the new-born children and the month or season of the year. He finds that the average weight is greatest in the autumn, and decreases through the winter until spring, when it reaches its minimum; then it rises through the summer, when it is about the same as in winter. This corresponds inversely to the curve for the death- and sick-rate in Denmark, which is at its maximum in March and its minimum in September and October.

Lastly, the author considers the bearing of these data on the problem of the numerical relation of the sexes. His figures indicate that the younger the mothers are at the beginning of child-bearing, the greater is the proportion of boys. No data were collected on the age of the fathers. But from other sources, it is learned that the younger the woman is at marriage, the older is the father compared with her age. Thus women under 20 marry on the average men 25.6 years of age; and at the other end of the series of diminishing differences, women 45 to 50 years old marry men of an average age of 47.4 years. This conclusion is in harmony with the Hofacker-Sadler theory that where the mother is younger than the father, more boys are born of the union, and vice versa.

The Growth of Children of School Age

Hertz, the author of the study on this subject, formerly docent in school hygiene in the University of Copenhagen, observes, "At no other age does the good or evil of the surrounding conditions make such a marked impression on the bodily structure as just in the years of childhood and growth. The development of children should be carefully followed by means of accurate measurements." In doing so a distinction should be made not only between boys and girls, town and country, different sections of the land, but also between different classes of the community.

The Anthropological Committee has made a general and systematic study of the children attending the compulsory schools, in order to determine "whether the great efforts that have been made in the last generation towards improving the conditions of school life, have resulted in any appreciable progress with regard to the bodily development of the children."

Hertz deals with the measurements made on 2,365 children attending two schools in Copenhagen. These schools represent different classes of the community; the one is a paying school, the other a

free school. "With certain small reservations each may be taken as fairly representative of the class of children that would attend such schools in general. There can be no doubt that there is a considerable difference in hygienic and economic regards between the homes which send their children to the paying schools. The health is better in the latter, as also the clothing and general cleanliness. The interesting question was then to ascertain whether these conditions were reflected in the bodily measurements."

The tables for weight and height "give an unmistakable answer to the question." Comparing the children of each year between 6 and 13, Hertz finds that the children of the paying school (and this is true of both sexes), are throughout heavier and taller. The difference varies at different ages, being at a minimum at about the tenth year, for both height and weight. These phenomena the author explains on two principles, namely, "the influence of harmful conditions is most felt at the periods when development should be proceeding most rapidly, and there is a diminution in the growth-energy before puberty sets in."

A comparison is made between the children of the capital with those in some other parts of the country. It is found that the Copenhagen children have throughout the smaller measurements. This is especially significant in connection with Hansen's and Heiberg's figures for the relative weights of new-born children in the capital and the provinces, noted above. It may also be noted that S. H. A. Rambusch, in a study on the physical characteristics of school-children in some parishes in central Jutland (also published in this report), finds that the sons of farm-proprietors (gaardmænd) and of cottagers or crofters (husmænd) are at the same level in regard to height, while the daughters of the farmers are a little taller than those of the cottagers, a condition which he ascribes to the circumstance that the former are not exposed to so much work as the latter.

A further comparison is made between the present measurements and the results obtained 27 years previously. It would appear that while the boys have remained stationary, the girls have increased considerably in weight during that period.

Measurements of the chest show that the expansion increases year by year, the increase being greater for the boys than for the girls. The latter fact is referred to the lack of sufficient gymnastic exercise among the girls.

The Quality of First-born Children

Sören Hansen, in his study of this question, points out that "in most civilized countries the great decline in fertility has in recent years given rise to the fear that the supposed weakness of the first-born children may lead to a lowering of the general standard of the race." He states that "to Karl Pearson belongs the hoonr of first displaying the eugenic importance of the question."

It is well known that many distinguished men were the youngest in the family. J. F. Cooper was the eleventh child, Holberg the twelfth, Schubert the fifteenth, Franklin the seventeenth, H. C. Andersen the twenty-first, etc. On the other hand Linnaeus, Goethe, Björnson and many others were the first born; Napoleon was the second child, Balzac the third, etc. "The general opinion that the later born possess more genius or talent must be relegated, on the available evidence, to the region of fairy tales of Cinderella and the youngest son who wins the princess."

The author has analyzed the statistics furnished by the reports of

an institution for feeble-minded in Copenhagen. His calculations show that the actual proportion of first-born among the feeble-minded is far in excess of that expected in a normal distribution. Pearson found a like condition among tuberculosis patients. ("A first study of the statistics of pulmonary tuberculosis," London, 1907). But Sören Hansen notes that "if this excess were due to some factor connected solely with the first birth or first conception, then the counterbalancing might be expected to begin already with the second-born, but this is not the case. The second and third children are more frequently represented among the feeble-minded than they should be, if the detrimental condition only affected the first born." Similar results from another asylum suggest that it is the earlier children and not merely the first child, which show the weakness. Weeks, in his study of epileptic patients ("The inheritance of epilepsy. Problems in eugenics." London, 1912), arrives at the same conclusion.

To test the matter more closely, Hansen examined a large material, 3,522 cases in all, dealing with patients suffering from pulmonary tuberculosis. Using the same method as in the case of the feeble-minded, *i.e.* comparing the actual number of patients with the number estimated from the general average, he finds that "not only the first-born but also the second and third are more frequently attacked by tuberculosis than they should be if their position in the family were of no importance, and this both for men and women." Pearson's investigation on the same subject, mentioned above, gave a similar result, but the material in the Danish investigation is so much more extensive.

The author concludes that "with regard to the general question, the inferiority of the first-born, more extended investigations are necessary before drawing definite conclusions, and it is desirable to know how far this possible inferiority may be counterbalanced by the many other factors which determine the racial quality. Increasing care of the children tends to diminish the dangers which have threatened the first-born more than the later and it is just this care which keeps down the mortality in families with few children. On the other hand, there is a good deal of collateral evidence for this relative inferiority. The frequency of abortion at the beginning of child-bearing, the greater number of still-born, the smaller weight on an average at birth, indicating under-nourishment, and the greater mortality during infancy point to some initial, constitutional weakness among the first-born. Nevertheless, the initial difficulties over, there is little difference in the death-rate after the fifth year between the first-born and the later children. Hence there would seem to be no reason for the inferior quality of the first-born among adults, as indicated by the greater frequency of tuberculosis, unless it be that the infection is obtained just in the early years, when the powers of resistance are not yet developed to the standard of the later children, and remains latent until a later period." This leads to the difficult question of inheritance. The author is inclined to believe that too much weight has been given this factor. A comparison of patients from consumptive and non-consumptive families shows no difference between the two so far as the relatively greater frequency of the first-born is concerned. In the words of the author, "The inferior quality of the first-born is thus a mystery and a question by itself, which is of such great importance that it deserves close attention and critical study."

Sören Hansen's study is followed by a paper by Westergaard, which is an excellent example of the use of "statistics in the service of anthropology," to quote part of its title. It is based chiefly on the

data of the previous paper. The author points out that practically all statistics used in anthoropological investigation are "representative" statistics, *i.e.*, a group of observations are made which can be regarded as fairly typical and from them it is sought to discover a series of casual relations, which are then applied to related groups. Emphasis is laid on the necessity of carefully analyzing material which is taken as representative. For instance, "we may collect observations on the number of women addicted to drink in homes for inebriates. If the number is large, we may obtain interesting information regarding the characters of these and the conditions under which they lived. But we can hardly draw conclusions with regard to the whole population, nor as to the inception and relative frequency of drunkenness at different ages and so on."

With reference to the particular question at issue, Westergaard declares that even though we assume that the feeble-minded on which observations were made were representative of their class, we do not know what the relation is to the population as a whole. For we encounter the double dfficulty that we have no adequate statistics on the proportion of first-born, second, etc., in the population, and even if we do gather such statistics now, we cannot take those as typical of conditions years ago, for statistics show that the birth rate is surprisingly variable from year to year. The feeble-minded which have been studied are as a rule beyond the years of early childhood, so we cannot be satisfied with figures on new-born children. It is the survivors, and not the new-born, with whom we are concerned. Census material for a certain district in Denmark shows the number of living and dead children in families, so that the proportion among the survivors of first-born, etc., can be approximately calculated. A comparison with the data for the feeble-minded indicates that the first-born have no greater tendency to feeble-mindedness than other children.

Another consideration which should be taken into account is the number of children in the families from which the feeble-minded come. This would indicate why so many first-born feeble-minded are found in proportion to all the first-born in the population. All families with one child, who is not feeble-minded, are not included in the observations at all. If one counted the families with one child reported in the returns, and asked how many of these had a feeble-minded child, the answer of course, would be 100 per cent. Hence the preponderance of the first-born among the feeble-minded in the data. "The preponderance is only formal, not real." To quote the author, "This peculiarity in the material shows the necessity of having particular information regarding both the serial position of the subject dealt with and the size of the family." In the Danish material (3522 patients) on consumptives 988 were first-born, but of these 178 belonged to one-child families. These must be excluded if one wishes to compare the relative frequency of the first and second child; similarly, the two-children families must be excluded in comparing the second with the third, etc. A comparison on this basis shows no marked differences. "If there is any correlation between the serial number and the disease, the later children are more exposed to the danger than the intermediate, the latter slightly less than the first-born, but the conclusion is not certain." A like criticism could be made on Pearson's study of pulmonary tuberculosis.

To secure certainty in judgments on the effects of the serial number of the birth, data should be gathered on a group of families, inquiry being made concerning the condition and relationship of each individual member. Westergaard points out that this was the method

used by Ansell in constructing his survival-tables. It may be added that a like method is employed and recommended by W. H. R. Rivers for the study of phenomena of relationship in ethnological research.

So on the question of the relative inferiority of the first-born child the answer on the basis of the data and criticism given by our Danish authorities must be the old verdict, "Not proven."

The Danish Anthropological Committee is to be congratulated on the important work which they are prosecuting. Not only their results, but even more their methods, are worthy of world-wide attention. Also the national government is to be complimented for initiating and supporting this survey. It presents a needed example for larger and wealthier nations. For years the Royal Anthropological Institute and other scientific bodies have appealed in vain to the British Government for the establishment of an anthropometric survey of the United Kingdom. In the United States such a national undertaking is presumably such a far-off event that as far as known no one has yet even asked for it. It is not the first time that the little kingdom of Denmark has led the advance in scientific research. European prehistoric archæology, that great and rich branch of anthropology, dates, as a scientific study, from the establishment of a Danish royal commission in the early years of the nineteenth century. In the first decade of the twentieth century Denmark has taken the lead in establishing a national survey in physical anthropology.

A REPORT OF THE BUFFALO CONFERENCE ON THE BINET-SIMON TESTS OF INTELLIGENCE

By Lewis M. Terman

In connection with the Fourth International Congress on School Hygiene, which met at Buffalo, August 25-30, 1913, a special conference was arranged for the consideration of the Binet-Simon tests of intelligence. The topics discussed included criticisms of the scale, suggestions as to methods of revision, extension or amplification, the interpretation of results secured by its use, illustrations of its value in psychological research, etc. All persons in this country who were known to have made any extensive trial of the scale were invited to participate, of whom all but three or four were able to do so. Ten papers were presented, including one from Dr. Otto Bobertag, in Germany. The following brief abstract of these papers may be of interest to the readers of the Pedagogical Seminary.[1]

Some Limitations of the Tests, by Charles S. Berry, of the University of Michigan.

In criticising the tests it is necessary to bear in mind the purpose for which they were designed; that it is not their aim to test all aspects of intelligence, but only general intelligence; that they are not calculated to bring to light emotional or volitional peculiarities, except incidentally; and that Binet never thought of them as a method of complete mental diagnosis.

By "intelligence," Binet means especially judgment, power of comprehension and reasoning. He does not claim that these can be tested without the results being influenced to some extent by differences of environment and training, but he does not tell us definitely enough how to make allowance for such influences.

The scale is defective and imperfect beyond 11 years, so that mental growth beyond age 10 is inaccurately measured. Trial of the 15 year tests on 68 college seniors showed that only three students were able to pass all the tests of this group, and only 53% three or more.

A committee should be appointed to standardize the scale as regards both the choice of tests and the procedure for each individual test. To such a committee should also be entrusted the task of revising the scale each year in the light of new investigations.

The Degree of Mental Deficiency as Expressed by the Relation of Age to Mental Age, by F. Kuhlmann, psychologist at the State School for Feeble-Minded at Faribault, Minnesota.

Mental development, like brain growth, proceeds at a constantly decreasing rate. There is much less difference, for example, between eleven and twelve year intelligence than between one and two year intelligence. The year is therefore not a stable unit for defining the degree of retardation. A still more fatal objection to the use of the year standard for defining intellectual status is the fact that mental

[1] In the following abstracts no effort is made to follow the language of the papers reported.

growth takes place at a slower rate with feeble-minded than with normal children. For both of these reasons combined, it comes about that a retardation of one year in early childhood may amount to several years of retardation by the age of fifteen.

The proposal of Stern to express intellectual status by the ratio between mental age and real age (the so-called *intelligence quotient*) avoids a part, but not all, of this error. The intelligence quotient would be a true index only (a) if the rate of development for normal and feeble-minded children were the same; and (b) if it continued as late in the feeble-minded as in the normal. It is probable that (a) introduces an error of some importance, while as regards (b) it is necessary to await evidence.

In order to throw light on the reliability of the intelligence quotient, the data from 1,006 feeble-minded children were tabulated in such a way as to make possible a comparison between the average mental ages calculated by the intelligence quotient. The results showed a very close resemblance. It appears, therefore, that the error incurred by the use of the intelligence quotient is not large.

Current Misconceptions in Regard to the Functions of Binet Testing and of Amateur Psychological Testers, by J. E. W. Wallin, University of Pittsburg.

Four misconceptions were pointed out, as follows:

Misconception 1, that intelligence tests constitute a complete mental examination. Instead, they are useful only for a preliminary survey. They do not give a differential diagnosis, locate causes, or forecast the outcome.

Misconception 2, that a brief course in mental testing will make a competent clinical psychologist. Prolonged special training is necessary, and this must be built upon a solid foundation of psychological scholarship.

Misconception 3, that the Binet-Simon scale is absolutely accurate. There are some cases in which it gives a misleading report. To rely upon it as an infallible method leads to an exaggeration of the amount of feeble-mindedness which exists.

Misconception 4, that norms for the revision of the scale can be secured by random testing and by haphazard procedure.

The Use of the Binet-Simon Scale with Delinquent Children, by Grace M. Fernald, State Normal School, Los Angeles, California.

The scale grades fairly accurately the intelligence of school children from 6 to 12 years, but it does not apply equally well to some of the street waifs of our large cities because the experience and standards of achievement of such children are almost entirely different from those of ordinary children. The usefulness of the scale for juvenile court cases is impaired for this reason, since about 80 per cent of these cases (in Chicago, at least) come from homes more or less broken up. Their intelligence has been molded by the life of the street, which demands action based on practical judgment rather than abstraction or nicety of verbal distinction.

Too many of the Binet tests depend upon language. This is especially disturbing in the case of children who have had no opportunity to acquire a command of the language in which the test is given. Instances were found in the Juvenile Psycho-pathic Institute of Chicago of children from immigrant families who tested retarded by the Binet scale, but who later proved themselves capable of making excellent school progress. The scale should include more motor and game tests.

The tests are so unsatisfactory in the upper age groups that an eighteen-year-old perfectly normal subject might easily grade six years retarded.

A Comparison of White and Colored Children Measured by the Binet-Simon Scale, by Josiah Morse, University of South Carolina. 123 colored and 225 white children of corresponding ages were tested by Goddard's revision. The two groups had had equal school advantages. The tabulation of mental ages shows a decided superiority of the white children as follows:

	Colored	White
Retarded more than one year	29.4	10.2
Satisfactory	69.8	84.4
Advanced more than one year	.8	5.3

To make the comparison a fairer one, the white children were divided into two groups according to social class and the white children of the poorer class (mill children) were then compared with the colored. The latter were still inferior, the mill children standing about half way between the colored children on the one hand and the well-to-do white children on the other.

When the colored children were classified according to color, a *direct* correlation was found between average mental age and darkness of color. On the other hand the lightest group showed the greatest range of variation, containing a larger proportion of both retarded and advanced than any other colored group.

The colored children were, on the whole, superior in counting, memory for digits, naming words, finding rhymes, defining terms, and in time orientation. They were inferior in aesthetic judgment, observation, reasoning, use of words, logical memory and resistance to suggestion.

"Possibly in the Binet scale a method has been found which will prove of the greatest service in the solution of problems in contemporary folk-psychology and race and social adjustment."

The Value to be Derived from Giving Mental Tests to all School Children, by W. H. Pyle, University of Missouri.

The author's experiments with mass tests given to several thousand school children prove that it is possible to grade the intelligence of school children in this way with a fair degree of accuracy. Such tests, however, can only be used from the second grade up, and are not meant to replace entirely the method of individual testing. They will prove of value in enabling the teacher to make a rapid preliminary survey of the intelligence of her pupils and will disclose the need of further tests in individual cases.

Suitable for this purpose are tests of logical and rote memory, tests of imagination, association and linguistic invention, the cancellation and substitution tests, etc.

In addition to grading intelligence, such tests will also supply the teacher with valuable information regarding the individual differences of children with respect to various mental functions.

The Reliability of the Binet-Simon Measuring Scale of Intelligence, by H. H. Goddard, Vineland, New Jersey.

There are two ways of judging the reliability of a scientific method: (a) from apriori considerations and (b) from empirical data. The two methods do not always agree. Some have said that intelligence can not be measured by the Binet scale, while as a matter of fact it is constantly being measured by this method, and with success. The scale was not intended, however, to reveal fine differences of intelligence amounting to small fractions of a year.

There is nothing in the scale itself to give us a criterion of feeblemindedness. Only data derived from the history of cases subsequent to testing will determine the amount of mental retardation necessary to constitute deficiency.

Only persons trained in the use of the tests can secure reliable results, though anyone with intelligence who is willing to study the directions with care can secure results of value to himself. Important action should in all cases await a more expert diagnosis.

The experiment of having several different persons grade the same children proves that the results of trained testers agree almost perfectly, those of untrained testers not so well.

It is nowhere claimed that the Binet tests render further study of the case unnecessary. All the supplementary information it is possible to secure must be utilized in every case. It sometimes happens that a child will test retarded who is a normal pupil, but this is very rare.

The doctrine of probability would lead us to expect that according to the method by which the individual tests of the Binet scale are located (i.e., on basis of 75 per cent of normal children passing), about one child in 1,000 who fails in all the tests for his age group would nevertheless be of the mental age represented by that group. Since many of the tests are located on the basis of a larger per cent than three-fourths passing, the actual danger of grading a given child more than one year below his true mental age becomes practically negligible.

Some Requirements of Graded Mental Tests, by Carrie R. Squire.

The Binet scale is useful, but as it stands it is imperfect and limited. The tests are heterogeneous and little comparable in the different ages. This acts to obscure the laws of mental growth.

To show how mental growth proceeds we should have a number of serial graded tests, each of which would test a given function at several different levels. Several of the Binet tests are suitable for such arrangement, including memory for sentences and digits, comparison of weights, the drawing tests, interpretation of pictures, piecing together of forms, etc. Several graded tests should be chosen which will test a variety of different functions, but a large number of such series is not necessary for grading intelligence. The tests should resemble those of Binet in type, not the rigid experiments of the psychological laboratory.

Some Theses Regarding Methods of Using the Binet-Simon Scale, by Dr. Otto Bobertag, Breslau, Germany.

Dr. Bobertag's paper was brief, but touched upon a number of fundamental sources of error on the use of the scale and on the methods of securing data for its revision. It warned especially against placing reliance upon the results of untrained examiners, using the tests in a mechanical way, injecting unintentional variations into the procedure, et cetera. Dr. Bobertag's criticisms are the fruit of several years of careful research with the tests.

Suggestions for Revising, Extending and Supplementing the Binet Intelligence Tests, by Lewis M. Terman, Stanford University.

In securing children for the purpose of revising the scale every kind of "selection" is to be avoided as nearly as possible. An attempt to eliminate from the experiment all except the "normal" children necessarily introduces the possibility of error. It is merely necessary to choose a school population of average quality and to test all the pupils, excepting, of course, the deaf and those who do not know the language, etc. Revisions can not safely be based on statistics derived solely from feeble-minded cases.

Much confusion exists as to the percentage of passes which should guide us in locating a given test. The search for any given per cent is beside the point. On the present plan of the scale (tests by year units), the proportion of passes necessary to place a test properly

at the lower end is well above 75 per cent, while at the upper end the number is below 75 per cent. This is due to the decreasing rate of growth in the upper years, which makes the scale coarse at the lower end and finer (in size of unit of measure) at the upper end. If the unit were uniform, and sufficiently fine, slightly over 50 per cent of passes would locate a test properly.

It is not necessary, as some have claimed, to keep the number of tests in the different age groups equal. If they are to be made equal, six would be a better number than five.

No revision yet made has placed all the tests in the group where they belong. Some of the tests, also, should be replaced by better ones already in existence. The following are important criteria in the choice of tests for this purpose:

1. They should bring as nearly as possible the same factors into play in all children.
2. They should be little subject to the influence of the personal equation in grading.
3. They should be usable.
4. They should test intelligence, not training.
5. They should fit *accurately* the age where they are to be placed.

The following new scales would be of great value for practical purposes:

a). A new scale on the order of the Binet scale to be used interchangeably with it.

b). A scale suitable for mass tests, for preliminary surveys.

c). A scale made up of graded serial tests like those recommended by Miss Squire.

d). A rough pedagogical scale which could be applied at one sitting.

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The writer of this report prepared papers dealing with other aspects of the Binet scale for two other sections of the Buffalo Congress, and a brief resume of these may be added to the above account.

Psychological Principles Underlying the Binet-Simon Scale and Some Practical Considerations for its Correct Use. (For the Conference on the Education of Backward, Truant, Delinquent and Dependent Children.)

The Binet tests differ from the earlier tests of intelligence in three important respects: (1) they represent the first serious attempt to form a graded scale of tests, and this feature is one of the main reasons for their success. (2) They aim at the higher intellectual processes directly, instead of trying to measure intelligence indirectly through tests of the elementary mental processes. (3) The Binet tests are practically the first to break loose from the influence of the "faculty" psychology. Instead of measuring separate functions, Binet undertook merely to ascertain the level of *general intelligence.*

In order to give a fair criticism of the tests it must be remembered that they are subject to certain avowed limitations. They make no pretense of exploring the entire mentality of the child, or even his special lines of intellectual ability (special talents).

For determining approximately the grade of general intelligence the scale is unquestionably reliable in the main, at least for the years 3 to 12. This is admitted by everyone who has made any serious study of the scale. The minor imperfections are well known. Abelson and Kuhlmann have proved conclusively the great superiority of such tests over the teacher's judgment as a means of determining intelligence; Goddard has shown the close correlation between the Binet results with the feeble-minded and industrial efficiency; and Bobertag

finds that the results of the tests, statistically treated, are such as would satisfy the (theoretical) requirements of a fairly accurate scale.

Special sources of error which merit further attention include such matters as the part played by chance in some of the responses, the lack of exact and impersonal methods of scoring, lack of uniformity of procedure, momentary physical or mental indisposition of the child, the use of the tests by untrained examiners, etc.

The Significance of Intelligence Tests for Mental Hygiene. (For the section devoted to mental hygiene.)

Mental hygiene must be based largely on the findings of differential psychology, and it is in the measuring of intelligence that differential psychology has met its greatest success. The rehabilitation of mental tests is one of the most significant of all recent developments in psychology. Intelligence tests have at least the following points of contact with mental hygiene:

1. By aiding us to identify the feeble-minded and to determine accurately the level of their mental powers they enable us to choose the methods and matter of education which will guarantee for such children the best possible returns for their efforts. This is an essential condition of their volitional and moral training.

2. Intelligence tests also emphasize the individual differences present among normal children and they are doing much to loosen up the current systems of school classification. Mental hygiene, for the bright as well as for the dull, demands that school requirements be apportioned according to the ability of the learner.

3. The segregation of the feeble-minded, which is sure to follow the further use of intelligence tests, will, besides aiding in the elimination of degeneracy, remove a demoralizing and retrograding influence from the lives of many normal children. Reference is here made to those who are compelled to associate with the feeble-minded either in the home or the school.

4. Mental health, as is well known, depends intimately upon opportunities for appropriate self-expression in work. To insure this, vocational guidance of youth is necessary; and vocational guidance must be based to no small degree upon measurements of intelligence. All the important occupations will need to be graded and classified with respect to their demands upon general intelligence.

5. Intelligence tests afford us the first means we have yet had of determining accurately the influence upon mental capacity of such important matters as ventilation, sleep, adenoids, malnutrition, or other conditions of physical defectiveness.

6. Intelligence tests could in part replace the other systems of school examinations in determining fitness for promotion. As Graziani, Helwig and others have shown, the latter sometimes produce grave injury to nutrition and to nervous health generally.

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There were other papers at the congress which dealt in one way or another with intelligence tests, and a public clinic was conducted by Dr. Wallin throughout the week for the demonstration of the Binet-Simon scale. Besides the official conference above reported, Professor Whipple called a special meeting of Binet workers for the sake of discussing more informally the problems relating to revision of the scale.

If, as we may confidently believe, the Binet-Simon scale will become when amplified, corrected and standardized, a tool of first importance in the conduct of psychological and educational researches, the attention it received at this congress was fully warranted.

BOOK NOTES

Fundamentals of farming and farm life. By Edwin Jackson Kyle and Alexander Caswell Ellis. New York, Scribner, 1912. pp. 557.

The authors find the defects of previous text-books on agriculture in the fact that they are usually prepared by busy scientists who know agriculture but not the mental processes of children and have had no experience in teaching them or in knowing the exact conditions in the schools where the texts are to be used, so that subject matter has not always been wisely chosen in the light of children's natural interests or needs, nor organized pedagogically by passing from the known to the unknown. This work, illustrated by 282 cuts in its 24 chapters, with half a dozen appendices, treats such subjects as plant growth, how plants are reproduced, the soil, fertilization, rotation, implements, farm crops, garden, school garden, farm, fruit growing, plant enemies, animal husbandry, care of milk products, horses, sheep, hogs, poultry, care and feeding of animals, farm planning and accounting, farm home and school, grounds and preparation, use of foods, sewing, self-improvement of teachers, rain-fall, school library, roads, boy corn clubs. It will be evident from this range of topics that the book is practical and takes its subject very close to the life of the child. So much has been written on this subject of late years that the undertaking of these authors was a bold one, but they realized that they must write the best as they were writing the last, and in the reviewer's opinion they have succeeded in doing so.

Uber das Seelenleben des Kindes. Von Adolf Dyroff. 2nd rev. and enl. ed. Bonn, Peter Hanstein, 1911. pp. 211.

After a little history of studies of the child's development as a whole, the author discusses the development of knowledge, with sections on each sense, memory, fancy, thought. He then takes up "*Das Streben des Kindes,*" discussing reflexes, feelings, instincts, valuations, feelings of knowledge, religious sentiments, suggestibility and will, summarizing in a general way the chief results of these studies. In the second part he discusses developments in special lines, art, drawing, music, poetry, the ego, interest, etc., with appendices on pedagogic results of child psychology and its methods and worth. It is a useful book but moves by far too much in the realm of philosophical categories. The author gives almost no evidence of knowledge of the copious American literature upon the subject and his philosophical proclivities make him gravitate toward speculative problems, a tendency which is by no means compensated by the abstract general attempts to apply child study data to education. The reader of this book must reluctantly admit that the author adds nothing to his subject and that those who get their first impression of this field from reading it will think it a somewhat arid and profitless domain of study.

Psychopathology of hysteria. By CHARLES D. FOX. Boston, Richard G. Badger (1913). pp. 437.

The main topics in this book are etiology, disturbances of sensory perception, visceral and circulatory derangements, psycho-motor disorders, psycholepsy, alterations of consciousness, multiple personality and amnesia hysteric temperament, suggestibility, delusions, insanity, theories, diagnosis, prognosis and treatment. In looking at a work on this subject now the first test would be to see how far the writer has understood and come to terms with Janet and his French associates, and the far more important group of Freudians. Unfortunately although he refers in terms of hearty commendation to Freud in his preface, it is evident that the author is not well acquainted at first hand with the Freudian literature, and such references as he gives are only those of English works. We look in vain for even the names of Dejerine, Dubois, Marcinowski, Adler, Stekel, etc. Thus this book must be set down as one of many meritorious ones mainly based upon wide experience of the very sensible and intelligent physician who has put down the things that have impressed him in his own practice and rather limited reading.

Hypnotism and disease; a plea for rational psychotherapy. By HUGH CRICHTON MILLER. London, T. Fisher Unwin, 1912. pp. 252.

The author attempts to present the main features of psychotherapy in a form suitable for intelligent lay readers of either sex, and so in his chapters discusses the interaction of mind and body, history of hypnotism, phenomena of hypnosis, psychological aspects, methods, who can hypnotise and who can be hypnotised, psychoneuroses, treatment of organic diseases, diseases of lost inhibition, with several appendices on insomnia, legal aspects, objections, conclusions, bibliography. It is a book of limited range and to our thinking not up to date. The author has very little to say and apparently knows little of modern psychoanalysis and has not at all grasped Dejerine's method, and we do not find evidence that he has ever heard of Marcinowski, so that while the book may be of service to amateurs, it seems to the present writer to be the work of only a somewhat more advanced one.

Inductive versus deductive methods of teaching: an experimental research. By W. H. WINCH. Baltimore, Warwick & York, 1913. pp. 146.

Mr. Winch certainly does, as the preface says, write with the authority of long experience as an official inspector of English schools. He brings the technique of experimental and statistical methods to bear upon the practical problems of the school. This book claims to be the first attempt to decide between the conflicting claims of inductive and deductive methods by experimental procedure. It is an attempt to decide between the two methods by testing children on precisely what they had been taught or had learned.

Backward and feeble-minded children. By EDMUND BURKE HUEY. Baltimore, Warwick & York, 1912. pp. 221.

The author here prints the results of his own long and careful study of the subject, treating classification and terminology, clinical studies of border cases, translation of data, suggested groups, lines of transition from feeble-mindedness to non-feeble-mindedness, a syllabus for clinical examination of children, with a final chapter on

mental functions to be tested and observed. The work bears all the marks of the characteristic thoroughness and conscientiousness of the writer, is of unique value, and should be in the hands of everybody interested in the subject.

How I kept my baby well. By ANNA G. NOYES. Baltimore, Warwick & York, 1913. pp. 193.

The value of this work, which will interest physicians, nurses, and parents, consists in the fact that it points the way to a method and type of observation that any intelligent mother can undertake with profit to herself and others and thus disprove the contention of some critics of child study that observation of young mothers on their own children can never yield data of value. It also furnishes generalizations in the shape of principles and rules governing feeding, clothing, etc. It has many interesting illustrations.

Sterilisation und Kastration als Hilfsmittel im Kampfe gegen das Verbrechen. Von FRIEDR. LUDW. GERNGROSS. München, J. F. Lehmann, 1913. pp. 42.

The writer first gives earlier efforts to prevent the increase of the worst elements of the human race, then discusses the limitations of subnormality in propagation, with a review of American laws, and grounds for and against the methods they advocate. He then discusses the problem of consent on the part of the victim of the operation and its medical aspects from the standpoint de lege lata and de lege ferenda. Two pages of literary references are appended.

Education for social efficiency; a study in the social relations of education. By IRVING KING. New York, D. Appleton & Co. (1913). pp. 311.

In writing this book the author has had in mind not so much the interests of educational specialists as the practical needs of busy teachers and parents. He attempts to present, largely by the method of illustration, a social view of education which is coming more and more to prevail. It is an excellent presentation of the present state of the problem.

The meaning of evolution. By SAMUEL CHRISTIAN SCHMUCKER. New York, Macmillan, 1913. pp. 298.

This is a charming if somewhat popular account of evolution in a large way, first before Darwin, then what he and Wallace accomplished, the basal idea, individual adaptation, adaptation for the species, life in the past, the development of mammals, of the horse, evolution since Darwin, and the future evolution of man.

Dusty air and ill health; a study of prevalent ill health and causes. By ROBERT HESSLER. Printed privately, 1912. pp. 352.

The writer, after an introductory chapter, discusses local conditions and changes in time, dust and its victims, cold and catarrh, dyspepsia, nervous prostration, circulatory and kidney troubles, specific diseases, biography, and ill health. It is an interesting and instructive book.

Über Sexuelle Gewohnheiten; ihre Ursachen, Folgen und wirksame Bekämpfung durch neue Kuren. Von K. Puster. Zweite Auflage. Leipzig, F. W. Gloeckner & Co., n. d. pp. 132.

The author first describes the extent and causes of sexual irregularity and methods adopted to prevent it, then discusses the errors that have been so prevalent in regard to the results of onanism and contrasts these with the real consequences of it. Another chapter is devoted to recognition and cure of onanism, and of its results, and the final chapter is devoted to sex training and education and methods of avoiding error.

Spelling ability; its measurement and distribution. By B. R. Buckingham. New York, Teachers College, Columbia University, 1913. pp. 116.

In this interesting monograph the main topics are the discussion of lists, original, selected, preferred, etc., and then the examination, conclusions regarding them, the ratings of individual pupils, overlapping, location of grade medians, use of the scale, the zeropoint in spelling ability, supplementary testing, etc.

Études de psychologie. Publiées par A. Michotte. Vol. 1, Fasc. 1, Mars, 1912. Paris, Félix Alcan. pp. 233.

This volume consists of three papers by Michotte himself, contributions to the study of logical memory, new researches on simultaneously appearing impressions of periodicity, and finally a note on recent contributions to the psychology of the will.

When great folks were little folks. By Dorothy Donnell Calhoun. New York, Macmillan, 1913. pp. 174.

A very simple story of the childhood and youth of fourteen eminent people. The writer has recognized the value and charm of biography.

Practice in the case of school children. By Thomas Joseph Kirby, New York, Teachers College, Columbia University, 1913. pp. 98.

The author first takes up the administration of the experiments, then improvement in the group as a whole, then the effect of distribution and length of work period upon the rate of learning, the permanence of the practice effect.

The school drama, including Palsgrave's Introduction to Acolastus. By James L. McConaughy. New York, Teachers College, Columbia University, 1913. pp. 116.

After discussing the school drama in general the writer characterizes it in England, the Elizabethan drama, the school drama in Germany, the Jesuit school drama, and Acolastus.

Der Fall Gogol. Von Otto Kaus. München, Ernst Reinhardt, 1912. (Schriften des Vereins für freie psychoanalytische Forschung, No. 2.)

Die Psychologie im Kampf ums Dasein. Von Wilhelm Wundt. Zweite Auflage. Leipzig, Alfred Kröner, 1913. pp. 38.

The secret of Herbart; an essay on the science of education. By F. H. Hayward. Revised and enlarged. London, Watts & Co., 1907. pp. 80.

Exceptional children in the public schools of New Orleans. A report of the Committee of The Public School Alliance, March, 1913. Pub. by The Public School Alliance of New Orleans, 1913. pp. 36.

Report on the progress and condition of the United States National Museum for the Year ending June 30, 1912. Washington, Government Printing Office, 1913. pp. 165.

Current educational activities; a report upon education throughout the world, being the 1911 volume of "The annals of educational progress." By John Palmer Garber. Philadelphia, Lippincott, 1912. pp. 387.

The life and public services of Andrew Haswell Green. By John Foord. New York, Doubleday, Page & Co., 1913. pp. 322.

Sixth biennial report of the Colorado State Bureau of Child and Animal Protection, December 1, 1910, to November 30, 1912. Denver, Colo., Smith-Brooks Printing Co., 1913. pp. 105.

Guide book to childhood; a hand book for members of the American Institute of Child Life. Prepared by William Byron Forbush. Philadelphia, American Institute of Child Life (1913). pp. 236.

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